

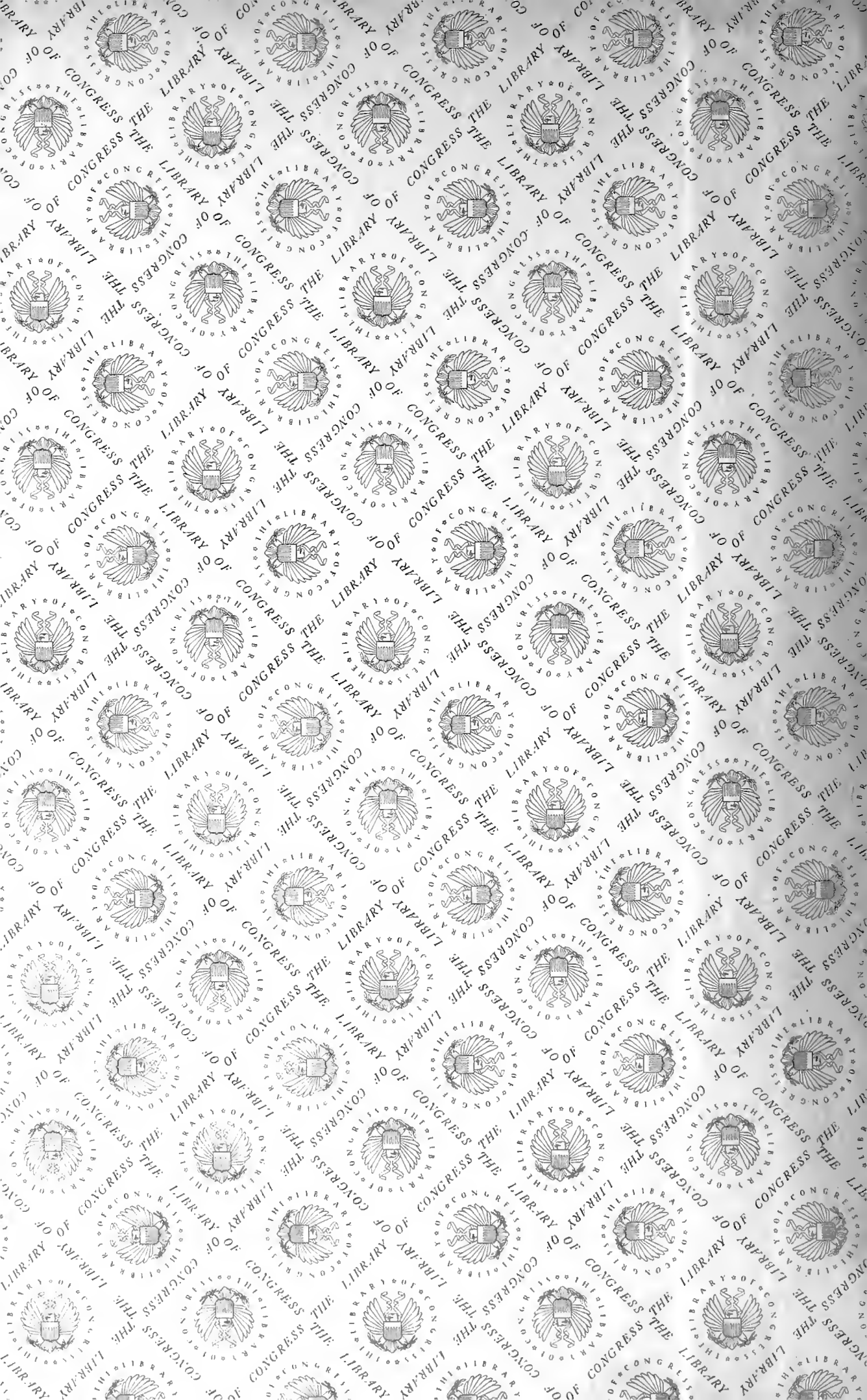
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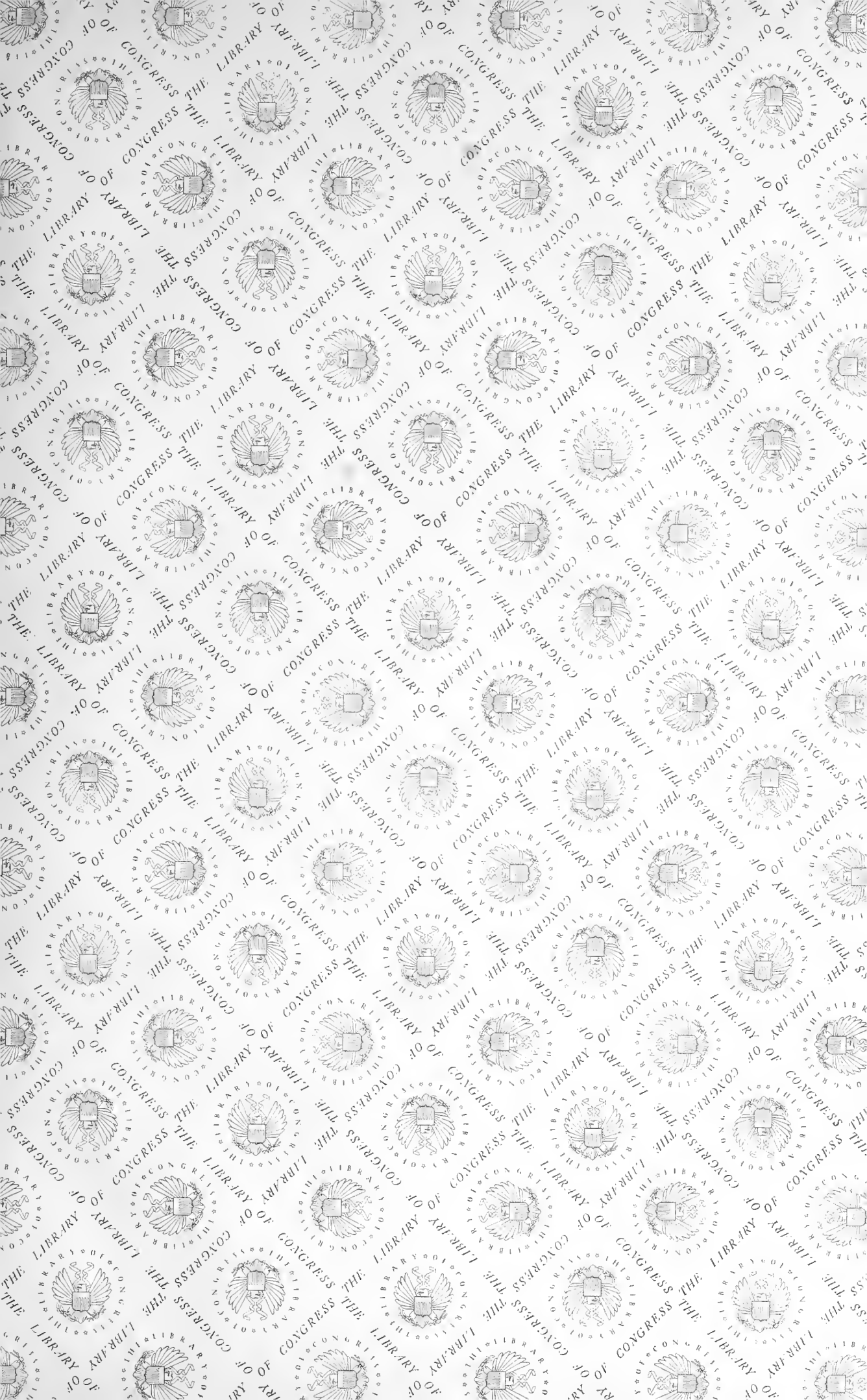
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DAY SYMBOLS

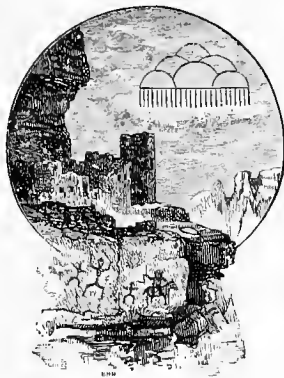
OF

THE MAYA YEAR

BY

✓
CYRUS THOMAS

EXTRACT FROM THE SIXTEENTH ANNUAL REPORT OF THE
BUREAU OF AMERICAN ETHNOLOGY



WASHINGTON
GOVERNMENT PRINTING OFFICE
1897

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DAY SYMBOLS OF THE MAYA YEAR

BY CYRUS THOMAS

INTRODUCTORY

As the origin and signification of the day and month names of the Maya calendar, and of the symbols used to represent these time periods, are now being discussed by students of Mexican and Central American paleography, I deem it advisable to present the result of my investigations in this line. The present paper, however, will be limited to the days only, as I have but little to add in regard to the month names or symbols. As the conclusion reached by Drs Seler and Brinton in regard to the order and sequence of the days of the month in the different calendars appears to be satisfactorily established, it will be accepted.

As frequent allusion is made herein to the phoneticism or phonetic value of the written characters or hieroglyphs, it is proper that the writer's position on this point should be clearly understood. He does not claim that the Maya scribes had reached that advanced stage where they could indicate each letter-sound by a glyph or symbol. On the contrary, he thinks a symbol, probably derived in most cases from an older method of picture writing, was selected because the name or word it represented had as its chief phonetic element a certain consonant sound or syllable. If this consonant element were *b*, the symbol would be used where *b* was the prominent consonant element of the word to be indicated, no reference, however, to its original signification being necessarily retained. Thus the symbol for *cab*, "earth," might be used in writing *Caban*, a day name, or *cabil*, "honey," because *cab* is their chief phonetic element.

In a previous work¹ I have expressed the opinion that the characters are to a certain extent phonetic—are not true alphabetic signs, but syllabic. And at the same time I expressed the opinion that even this definition did not hold true of all, as some were apparently ideographic, while others were simple abbreviated pictorial representations. In a subsequent paper² I expressed substantially the same opinion, and gave as my belief that one reason why attempts at decipherment have failed of success is a misconception of the peculiar character of the writing, which peculiarity is found in the fact that, as it exists in the codices and inscriptions, it is in a transition stage from the purely ideographic to the phonetic. I stated also my belief that the writing had not reached the stage when each sound was indicated by a glyph or sign.

¹Study of the Manuscript Troano, pref., p. viii.

²American Anthropologist, Washington, July, 1893.

This may further be explained by the following illustration: The conventionalized figure of a turtlehead is the symbol for a "turtle," *ak*, *ac*, or *aac* in Maya; and a conventionalized footprint is the symbol for "step" or "road," *be*, *beil*, in Maya. These may be brought together to form the word *akyab* or *kayab*, which may have no reference to the original signification of the combined symbols. These two glyphs are, in fact, combined to form the symbol for the month *Kayab*.

These statements will perhaps suffice to make clear my views on this question, which do not appear to have been clearly understood, possibly because of my frequent use of the words "phonetic" and "phoneticism," and perhaps rather loose reference to "letter elements."

It is proper, however, to add that I am inclined to the opinion that modification in the form and details of a glyph which belongs to the class which, for want of a better term, we may designate "phonetic," in many cases indicates a modification or change in the signification or word value. I say in "many cases," because these modifications are due often to the greater or lesser accuracy with which the glyph is drawn, the caprice of the scribe, and other causes which have no reference to sound or signification. For example, the change of a rounded or circular symbol to a face figure, as is often done, does not appear, at least in the day signs, to have any significance. On the other hand, a slight variation, if permanent, may be indicative of a difference in signification or phonetic value. This appears to be true, to some extent, whether we consider the characters ideographic or as, in some sense, phonetic.

The lists of the days in the Maya, Tzental, Quiche-Cakchiquel, Zapotec, and Nahuatl, in the order usually given, are as follows:

Names of the days in the different calendars

Maya	Tzental	Quiche-Cakchiquel	Zapotec	Nahuatl
Imix.	Imox.	Imox.	Chilla.	Cipactli.
Ik.	Igh.	Ik'.	Gui, Ni, Laa.	Ehecatl.
Akbal.	Votan.	Akbal.	Guèla.	Calli.
Kan.	Ghanan.	K'at.	Guache.	Cuetzpallin.
Chicchan.	Abagh.	Can.	Ci, Ziie.	Cohuatl.
Cimi.	Tox.	Camey.	Lana.	Miquiztli.
Manik.	Moxic.	Queh.	China.	Mazatl.
Lamat.	Lambat.	Canel.	Lapa.	Tochtli.
Muluc.	Molo.	Toh.	Niza.	Atl.
Oc.	Elab.	Tzi.	Tella.	Itz'euintli.
Chuen.	Batz.	Batz.	Goloo.	Ozomatli.
Eb.	Enob.	E, Ee.	Pija.	Mallinalli.
Ben, Been.	Ben.	Ah.	Quii.	Acatl.
Ix, Hix.	Hix.	Balam.	Eche.	Ocelotl.
Men.	Tziquin.	Tziquin.	Naa.	Quauhtli.

Maya	Tzental	Quiche-Cakchiquel	Zapotec	Nahuatl
Cib.	Chabin.	Ahmak.	Loo.	Cozcaquauhtli.
Caban.	Chic.	Noh.	Xoo.	Ollin.
Edznab.	Chinax.	Tihax.	Gopaa.	Tecpatl.
Cauac.	Cahogh.	Caoc.	Appe.	Quiahuitl.
Ahau.	Aghual.	Hunahpu.	Lao.	Nochitl.

THE FIRST DAY

Maya, *imix* (or *ymix*); Tzental, *imox* or *mox*; Quiche-Cakchiquel, *imox* or *moxin*; Zapotec, *chilla* or *chiylla*; Nahuatl, *cipaelli*.

The symbol of this day, which is quite uniform in the day series of the codices, is shown in plate LXIV, 1.¹ In this the essential features appear to be the black spot at the top, the semicircle of dots around it, and the short perpendicular lines in the lower half. The form on the right slab of the "Palenque tablet," and also in the Lorillard City inscription, copied by Charney, is given in plate LXIV, 2. The only particular in which this differs from the other is that the little circle at the top is crosshatched. The form shown in LXIV, 3, is found in the Tikal inscription; it shows also the crosshatching in the little circle at the top. This character, however, when combined with other glyphs, and when used otherwise than as a day symbol, sometimes varies from the types given. For example, in the symbol of the month *Mac* it is as shown in plate LXIV, 4. In this a minute, divided oblong, takes the place of the dark spot at the top, and a double curved line accompanies the circle of dots. Another form is shown in plate LXIV, 5. The only variation in this from the usual type is the introduction of two or three minute circles in the curved line of dots and the divided oblong. Dr Seler is inclined to believe that these are essential variants from the true *imix* symbol; nevertheless, as *m* is the chief consonant element both in *imix*, or *mox* and *mac*, there appears to be a relation between the form of the glyphs and their phonetic value.

Drs Seler and Schellhas believe *im* to be the radical of *imix* and *imox*, which are dialectal variations of the same word. Dr Brinton, however, basing his opinion on the fact that *mox* and *moxin* are used sometimes as equivalents, decides that the radical syllable is *m-x*. In this he is probably correct, and if so, this furnishes additional evidence of the close relation between form and sound, as in one case *m-x* are the chief phonetic elements and in the other *m-c*. It is probable that Drs Schellhas and Seler were led to their conclusion by the fact that the symbol bears a close resemblance to the conventional form of the female breast, which in Maya is *im*. This, which was perhaps the origin of the symbol, was probably selected simply because *m* is its only prominent ele-

¹The plates are designated by Roman numerals, and the figures by the Arabic numbers 1, 2, 3, etc. Hence LXIV, 1, signifies figure 1 of plate LXIV; LXIV, 2, figure 2 of plate LXIV, etc.

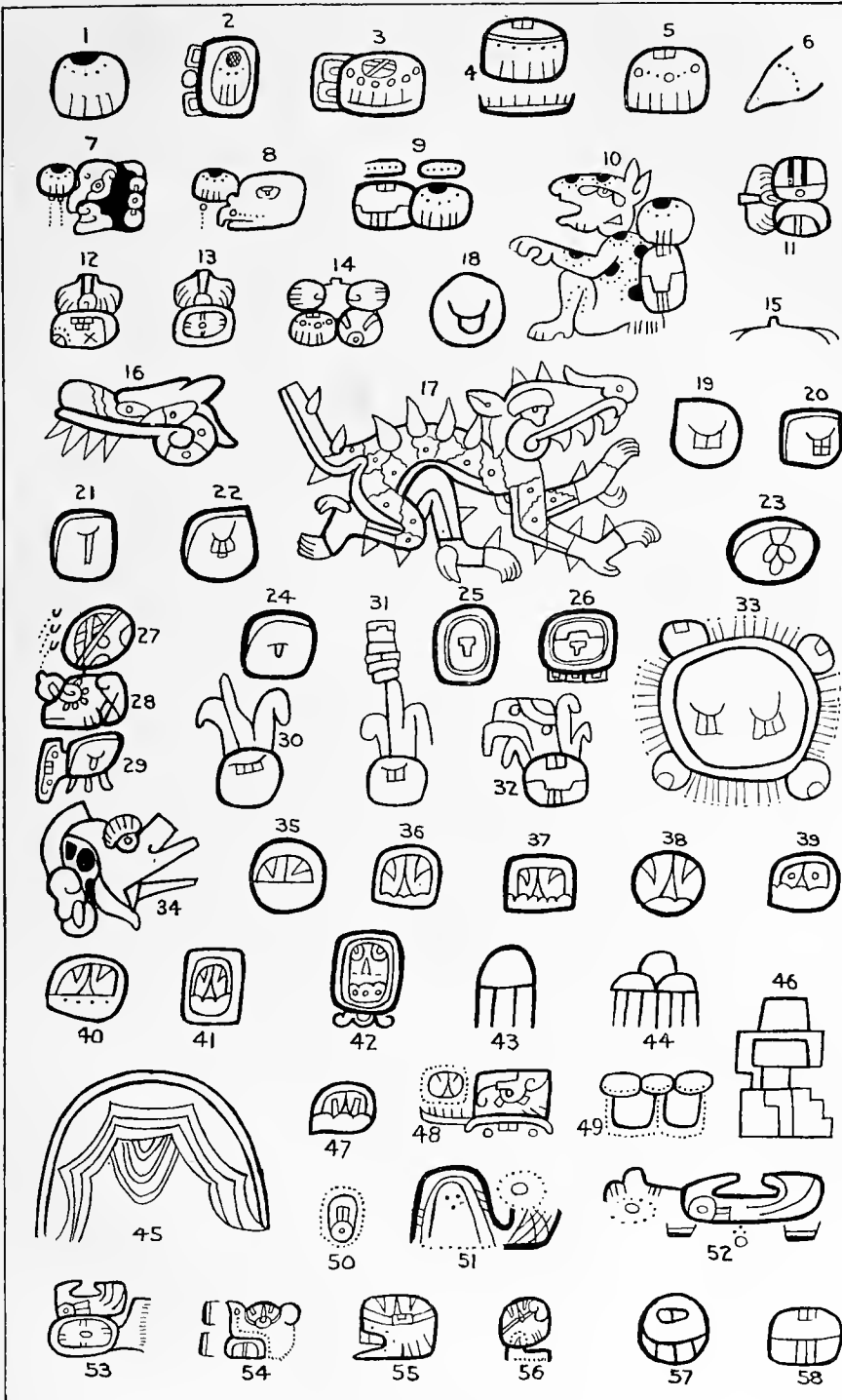
ment. Nevertheless, it is worthy of notice that the symbol for the day *Ix* is frequently represented as shown in plate LXVI, 36, from Tro. 5*c. This is similar in some respects to the *Imix* symbol, and the name contains the *i* and *x* of the latter. If the writing is phonetic, the points of resemblance may have some significance, otherwise they do not.

In a previous paper¹ I suggested that the probable signification of the character LXIV, 7, from Dres. 14c and 46b, is *maax*, "monkey, ape, imitator." Below the text in each case is seen a dark male figure (or deity), to which it undoubtedly refers, as is conceded by Drs Schellhas and Seler. The face character, which forms part of the glyph, may be only a determinative; at least I am unable to assign it any other value in this connection, and the necessity for such determinative is apparent. Brasseur, under *akab-maax*, speaks of a phantom or hobgoblin of this name, which he says signifies "the great monkey of the night." Perez gives as definitions "duende" (elf or hobgoblin) and "mico nocturno." Henderson, who writes the name *akabmax*, simply says "sprite, phantom." It would seem, therefore, that among the superstitious beliefs of the Maya was that of a night phantom or deity, which took the form of a monkey. But this black figure appears to be different from those on Tro. 34*-31*, with which Seler connects it and to which he applies the name Ekchuah.²

In the paper above referred to, I have interpreted the symbol shown in plate LXIV, 8 (from Dres. 35c) *maach*, "the crow," assuming the bird-head to be a determinative. Seler concludes that the bird which this represents is "a substitute, colleague, or symbol of the Rain god Chac," the so-called Maya Tlaloc so frequently represented in the codices. Although there is in this case no bird figure below to confirm our interpretation, yet it appears to be justified by the comparisons given and by its agreement with the phonetic value of the *imix* symbol. It is also further confirmed by the two glyphs shown in plate LXVIII, 13, 14, which occur together in Dres. 38b. In this case the two characters, which are combined in plate LXIV, 8, are separated, yet must have the same signification. Here the bird figure (a man with a bird's head or bird mask) is seen below. In both instances rain is represented, showing that the bird is supposed to bear some relation thereto. But it is more likely that it has direct reference to the wind which accompanies the rain storm rather than to "fruitfulness," as Seler supposes. Be this, however, as it may, our rendering of the *imix* symbol in this

¹American Anthropologist, July, 1893, p. 254.

²There appears to be much confusion among writers who have referred to this subject in regard to the "Black Deities" of the codices. Dr Brinton's remarks on this subject in his late work, "A Primer of Mayan Hieroglyphics," does not clear up the confusion. Apparently he has not discovered that quite a number of these are merely black figures of well-recognized deities not thus usually colored. It appears also, judging by his statements, that Dr. Brinton has failed to identify the characteristics by which the different deities of this class are to be distinguished. Dr Schellhas, in his excellent paper "Die Gottergestalten der Maya Handschriften," fails also to properly distinguish between these deities. Dr Seler, whose profound studies have thrown much light on the Maya hieroglyphs, fixes quite satisfactorily the characteristics of some of these deities, yet he confounds others which should have been separated.



COPIES OF GLYPHS FROM THE CODICES

connection appears to be justified, and indicates that the symbol is used here for its phonetic value rather than with any reference to its primary signification.

Dr Seler also refers in this connection to the lower line of symbols on Dres. 29-30b (three of which are shown in plate LXVIII, 15, 16, 17); to those shown in plate LXVIII, 18, 19, from Tro. 14c; and those shown in plate LXVIII, 20, 21, from Tro. 11a. He remarks that "in a number of hieroglyphs the character *imix* stands as an equivalent of a peculiar animal head which bears as a distinctive mark the element *akbal* over the eye. Thus in the hieroglyphs enumerating those above mentioned which, standing after the hieroglyphs of the cardinal points, seem to express the deities presiding over them, indeed there appears here on the same animal head, on one hand the character *imix*, on the other the element figure 165" (our plate LXIV, 5).

Although I am unable to interpret satisfactorily the *imix* symbols in the places above referred to, I think it can be made apparent that Dr Seler's explanation is without foundation. For instance, by referring to the plates of the Dresden and Troano codices mentioned, it will be seen that there is nothing whatever that refers to an "animal head which bears the element *akbal* over the eye," unless we suppose it to be in plate LXVIII, 16 (from Dres. 29b) and LXVIII, 21 (from Tro. 11a). There is no figure below or connected with either series to justify this conclusion. It is also certain that plate LXVIII, 21 (Tro. 11a) is not an animal head. Possibly plate LXVIII, 16 (Dres. 29b) may be intended for an animal head, but this is not certain and, moreover, it is not repeated in the series.

Referring to Cort. 27a it will be seen that the compound glyph shown in plate LXVIII, 22 (apparently the same as that on Tro. 11a) is repeated four times in one line, each connected with a cardinal point symbol, and each standing immediately over and evidently referring to a large vessel.¹ It is stated that it was a custom among the Maya during certain religious ceremonies to place a vessel in their temples at each of the four cardinal points.² As *cum* and *xamach* are Maya words signifying vessel, we still find in these the *m* sound. It is therefore possible that the similar glyphs on Dres. 29b and Tro. 14 and 15 also refer to vessels. The supposition seems to be strengthened by the fact that connected

¹Dr Brinton (Primer of Mayan Hieroglyphics, p. 93) claims to have discovered that this hitherto supposed "vessel" is, in reality, "a drum." As the four (Cort. 27a) are without any accompaniments to indicate their use as drums, and as each has above it one of the cardinal point signs, there is nothing, unless it be the form, to lead to the supposition that they are drums. In the same division of the two preceding and three following pages we see vessels of different kinds represented. In the lower divisions, pages 29 and 30, are vessels somewhat of the same elongate, cylindrical form, borne on the backs of individuals; and also in the lower division of page 40 are four tall cylindrical vessels, in each of which the arm of a deity figure is thrust. This section is copied in Dr Brinton's work with the subscript "The beneficent gods draw from their stores." Additional proof, if any is needed to show that these are vessels, is found in the Tro. Codex. On plates 6* and 7* are tall cylindrical vessels, with the same inverted V marks on them; moreover, one of them has the upper portion margined by the same tooth-like projection as those in the Cortesian plate. That these are vessels of some kind is apparent from the use the pictures show is made of them.

²See Brasseur's Lexicon under *bacab*, also the mention below, under the day *Ik*, of four vessels.

with the former are figures of the four classes of food animals—quadrupeds, birds, reptiles (iguana), and fishes. The latter refer to the hunter's occupation, being accompanied by figures of the deer. Landa, in his descriptions of the various festivals, repeatedly alludes to the four Chacs or Bacabs which represent the four cardinal points, and to the different classes of food animals presented where vessels were used. It is therefore more likely that the symbol is used in the places mentioned because of its phonetic value rather than as a substitute for the heads of lightning animals, for which supposed substitution Dr Seler admits he can not account.

Dr Seler refers also to the glyph on which the long nose deity is seated, Dres. 44a, shown in our plate LXVIII, 23. The prefix he interprets by "man, human being," and supposes the whole glyph refers to the attributes of the Rain god. As the deity holds a fish in his hand, and is seen in the lowest division of the same plate in the act of seining fish, is it not more likely that this symbol should be rendered by *cayom*, "a fisherman"? This is appropriate and retains the phonetic value of the *imix* symbol.

In the compound glyph 24, plate LXVIII, from Dres. 67b, to which Seler also refers in the same connection, we see in the figure below the same deity wading in water in which a fish is swimming. The right portion of the symbol is the same as the last (plate LXVIII, 23) and presumably has the same signification—*cayom*, "a fisherman," or *cayomal*, "to fish." I am unable to interpret the first or left-hand character; possibly it may be found in one of the terms *chucay*, or *caucay*, which Henderson gives as equivalents of *cayomal*. The latter—*caucay*—would give to this prefix precisely the phonetic value I have hitherto assigned it.

The next character Dr Seler refers to in this connection is that shown in plate LXVIII, 25, from Dres. 40c, where the long-nose god is seen below rowing a boat on the water. The adjoining symbol in the text is a fish. It is probable therefore that substantially the same interpretation is to be given here.

The group shown in plate LXIV, 9, consisting of an *Imix* and *Kan* symbol, is of frequent occurrence in all the codices. The relation of the characters in this combination varies, the order being frequently the reverse of that given in the figure, and again one being placed on top of the other. They frequently follow deity symbols, especially the symbol of the so-called "Corn god," and in these instances seem to refer to some attribute of the divinity indicated. However, they are by no means confined to these relations, being found quite frequently in other connections. The combination is occasionally borne upon the back of an individual, as Dres. 16a, and on Tro. 21b it is on the back of a dog. Dr Seler concludes "that it denotes the copal or the offering of incense." However, he subsequently¹ expresses the view that it may signify "beans and maize." In a previous work² some reasons were presented by me for

¹ Zeitschrift für Ethnologie, p. 115.

² A Study of the Manuscript Troano, pp. 80 and 56.

believing this combination was intended to denote bread or maize bread. This belief is based on the statement by Landa in his account of the sacrifices at the beginning of the year *Muluc*, that they made "images of dogs, in baked earth, carrying bread on the back," and the fact that in plate 21 of the Codex Tro., representing the sacrifices of this year, we see the figure of a dog with this *Kan-Imix* group on its back. This figure (plate LXIV, 10) probably represents the images of which Landa speaks, and the symbols on the back, bread or food in the general sense. Further notice of this combination will be given under the fourth day, *Kan*.

The character shown in plate LXVIII, 26, from Tro. 20*d, is erroneously given by Seler as an example of the *kan-imix* symbol. The two glyphs on the mat figure are unquestionably *imix* symbols, though of the two different types shown in plate LXIV, 1 and 5. He suggests that here it replaces the deity symbol, but this is contradicted by the fact that in both groups where it appears the deity symbol is present. The mat-like figure, which is probably a determinative, shows that it refers to the sack, bag, or kind of hamper which the women figured below bear on the back, filled with corn, bones, etc. As *mucuc* signifies "portmanteau, bag, sack, etc," *mucub* "a bag or sack made of sackcloth," and *mucubcuch* "to carry anything in a sack or folded in a shawl," it is more than probable we have in these words the signification of the symbol. The duplication of the *imix* symbol may be to denote the plural; or, as the words come from a root signifying "secret, hidden, covered," it may be to intensify. It is noticeable also that the latter or right-hand *Imix* symbol is similar to that used for the month *Mac*.

In the right section of Dres. 41b is the glyph shown in plate LXIV, 11, which, according to the phonetic system that appears to prevail in this writing, may be translated *yulpolic*, from *yulpol*, "to smooth or plane wood," or, as given by Henderson (MS. Lexicon), "to smooth, plane, or square timber, to beat off the log." This interpretation, which is given here merely because of its relation to the symbol which follows, is based in part on the following evidence: The left character, which has *y* as its chief phonetic element, is the same as the upper character in the symbol for the month *Yax* (plate LXIV, 12), and also the upper character of the symbol for the month *Yarkin* (plate LXIV, 13). Other evidence of its use with this value will be presented farther on, and also in reference to the right character of the above-mentioned symbol (plate LXIV, 11), which has been given *p* as its chief phonetic element. By reference to the figure below the text the appropriateness of this rendering is at once apparent, as here is represented an individual in the act of chipping off the side of a tree. This he appears to be doing by holding in his left hand an instrument resembling a frow, which he strikes with a hatchet.

The character immediately below the one above mentioned and belonging to the same series is shown in plate LXIV, 14. It may be interpreted *mamachah*, "to make flat by repeated strokes." The phonetic

value of the parts is obtained in this way. The upper character with two wings is Landa's *ma*, except that the circular wings contain the lines or strokes which the bishop has omitted, and which appear to indicate the *m* sound and are observed in the *Imix* symbol. Colonel Mallery, comparing this with the sign of negation made by the Indians and that of the Egyptians given by Champollion (our plate LXIV, 15), concludes that it is derived from the symmetrically extended arms with the hands curved slightly downward. This will furnish an explanation of the strokes in the terminal circles. The left of the two lower characters is almost identical with the symbol for the month *Mac* (plate LXIV, 4), omitting the *ca* glyph. The lower right-hand character is similar to the symbol for the month *Chuen*. We thus obtain legitimately the sounds *ma ma-ch*, whether we consider the parts truly phonetic or only ikonomatic.

For further illustration of the use of this symbol and evidence of phoneticism, the reader is referred to the article in the *American Anthropologist* above mentioned.

The fact that a symbol is used to denote a given Maya day does not prove, supposing it to be in any sense phonetic, that the Maya name gives the original equivalent. It may have been adopted to represent the older name in the Tzental, or borrowed from the Zapotec calendar and retained in the Maya calendar for the new name given in that tongue. However, the symbol for this first day, which has substantially the same name in the Maya and Tzental, appears to represent the name in these languages and to be in some degree phonetic, *m* being the chief phonetic element represented by it. The crosshatching in the little circle at the top, seen in some of the older forms found in the inscriptions, may indicate, as will later be seen, the *x* or *ch* sound, thus giving precisely the radical *m-x*.

It may be said, in reference to the signification of the names of the day in different dialects, that no settled or entirely satisfactory conclusion has been reached in regard to either.

The Cakchiquel word *imox* is translated by the grammarian Ximenes as "swordfish," thus corresponding with the usual interpretation of the Mexican *cipactli*. Dr Seler thinks, however, that the Maya names were derived, as above stated, from *im*. Nevertheless he concludes that the primitive signification of both the Maya and Mexican symbols is the earth, "who brings forth all things from her bosom and takes all living things again into it." If we may judge from its use, there is no doubt that the Mexican *cipactli* figure is a symbol of the earth or underworld. The usual form of the day symbol in the Mexican codices is shown in plate LXIV, 16, and more elaborately in plate LXIV, 17. As proof that it indicates the earth or underworld, there is shown on plate 73 of the Borgian Codex an individual, whose heart has been torn from his breast, plunging downward through the open jaws of the monster into the shades or earth below. On plate 76 of the same codex, the

extended jaws open upward, and into them a number of persons are marching in regular order. These apparently represent the thirteen months of the sacred year. One has passed on and disappeared from view, and the other twelve are following with bowed heads. It would seem from these to be not only symbolic of the earth or hades, but also to have some relation to time.

For positive proof that it is sometimes used to denote the earth, or that from which vegetation comes, it is only necessary to refer to the lower right-hand figure of plate 12, Borgian Codex. Here is Tlaloc sending down rain upon the earth, from which the enlivened plants are springing forth and expanding into leaf and blossom. The earth, on which they stand and from which they arise, is represented by the figure of the mythical *Cipaactli*.

It is quite probable that the monster on plates 4 and 5 of the Dresden Codex, which appears to be of the same genus, is a time symbol, and also that on plate 74 of the same codex. It is therefore more than likely that the animal indicated by the Mexican name of the day is mythical, represented according to locality by some known animal which seems to indicate best the mythical conception. Some figures evidently refer to the alligator, and others apparently to the iguana; that on plates 4 and 5 of the Dresden Codex is purely mythical, but contains reptilian characteristics.

Dr Brinton, probably influenced to some extent by the apparent signification of the Nahuatl name and symbol, explains the other names as follows:

This leads me to identify it [the Maya name] with the Maya *mer* or *mcer*, which is the name of a fish (the "pez arana," "un pescado que tiene muchos brazos"), probably so called from another meaning of *mer*, "the beard." . . . This identification brings this day name into direct relation to the Zapotec and Nahuatl names. In the former, *chiylla*, sometimes given as *pi-chilla*, is apparently from *bi-chilla-beo*, water lizard, and Nahuatl *cipaactli* certainly means some fish or fish-like animal—a swordfish, alligator, or the like, though exactly which is not certain, and probably the reference with them was altogether mythical.

Dr Seler, in his subsequent paper, gives the following explanation of the Zapotec name *chilla* or *chijlla*:

For this I find in the lexicon three principal meanings: One is the cubical bean (wurfel bohne). "Pichijlla, frisolillos o havas con que echan las suertes los sortilegos" [beans used by the sorcerers in casting lots or telling fortunes]; another meaning is "the ridge" (pichijlla, lechijlla, chijllatani, loma o cordillera de sierra); another is "the crocodile" (cocodrillo, lagarto grande de agua); and another "sword-fish" (pella-pichijlla tao, espadarte pescado). Finally, we have *chilla-tao*, "the great Chilla," given again as one of the names of the highest being. Here it seems to me that the signification "crocodile" is the original one, and thus far suitable. For the manner in which the first day character is delineated in Mexican and Zapotec picture writing [our plate LXIV, 16] shows undoubtedly the head of the crocodile with the movable snapping upper jaw, which is so characteristic of the animal.

Attention is called to the apparently closely related word as given by Perez—*mech*, *ixmech*, "lagartija."

It will not be out of place here to refer to a superstition pervading the islands of the Pacific ocean, which seems strangely coincident with the conception of the physical symbol of this day. This is a mythological monster known in some sections by the name *Taniwha*, and in others as *moko* or *mo'o*.

Dr Edward Tregear¹ speaks of it as follows:

Taniwha were water monsters generally. They mostly inhabited lakes and streams, but sometimes the sea. Sometimes the beast was a land animal, a lizard, etc, but the true *taniwha* is a water kelpie.

Mr Kerry Nichols,² speaking of these monsters, says:

With the other fabulous creations of Maori mythology were the *taniwhas* or evil demons, mysterious monsters in the form of gigantic lizards, who were said to inhabit subterranean caves, the deep places of lakes and rivers, and to guard tabued districts. They were on the alert to upset canoes and to devour men. Indeed, these fabulous monsters not only entered largely into the religious superstitions, but into the poetry and prose of Maori tradition.

The Hawaiian *Mo'o* or *Moko* appears, from the following statement by Judge Fornander, to have been applied sometimes to this mythological monster:

The *Mo'o* or *Moko* mentioned in tradition—reptiles and lizards—were of several kinds—the *mo'o* with large, sharp, glistening teeth; the talking *mo'o*, *moo-olelo*; the creeping *mo'o*, *moo-kolo*; the roving, wandering *mo'o*, *moo-pelo*; the watchful *mo'o*, *moo-kaala*; the prophesying *mo'o*, *moo-kaula*; the deadly *mo'o*, *moo-make-a-kane*. The Hawaiian legends frequently speak of *mo'o* of extraordinary size living in caverns, amphibious in their nature, and being the terror of the inhabitants.³

According to the Codex Fuen-leal, at the beginning of things the gods made thirteen heavens, and beneath them the primeval water, in which they placed a fish called *cipactli* (queses como caiman). This marine monster brought the dirt and clay from which they made the earth, which, therefore, is represented in their paintings resting on the back of a fish.

A similar conception is found both in Malay and Hindu mythology, differing somewhat in details, but always relating to some monster reptile. In the Manek Maya, one of the ancient epics of Java, Anta Boga, the deity presiding over the lowest region of the earth, is a dragon-like monster with ninety nostrils. The same conception is found also among other peoples.

In the Tonga language *moco* is "a species of lizard;" in Hawaiian *mo'o* or *moko* is "the general name for lizards," and the same word signifies "lizard" in Samoan; *moko-moko* is the New Zealand (Maori) name for a small lizard. Taylor⁴ says that *moko-titi* was a "lizard god."

It is therefore evident that a superstition regarding some reptilian water monster prevailed throughout the Pacific islands. It is true also that the Nahuatl *cipactli* certainly means some amphibious or

¹ Jour. Anthropol. Inst. G. B. and I., November, 1889, p. 121.

² Ibid., 1885, p. 199.

³ Polynesian Race, vol. I, pp. 76-77.

⁴ Rev. Richard Taylor, Te-Ika-a-Maui; London, 1870.

water animal—a swordfish, alligator, or something of the kind, though exactly which is not certain—or, what is more likely, the reference was altogether mythical.

It is possible, and perhaps probable, as stated above, that the Maya symbol of this day was taken originally from the conventional method of representing the female breast. Drs Seler and Schellhas appear to be of this opinion. But it does not necessarily follow from this that the character used for the name of the day has any reference to the female breast, as it is more likely used in this relation for its phonetic value alone, *m* being the chief phonetic element indicated thereby.

If the supposition herein advanced that the combination shown in plate LXIV, 9, denotes bread or food be correct, it is possible that the symbol is also sometimes used to indicate "maize," *ixim* or *xim*, on account of its phonetic value. As will be shown farther on, the *kan* symbol is not only used to denote the grain of maize and maize in the general sense, but it appears to denote in some cases bread or the tortilla.

THE SECOND DAY

Maya, *ik*; Tzental, *igh*; Quiche-Cakehiquel, *ik'*; Zapotec, *gui, ni, lua, luala* or *liaa*; Nahuatl, *checatl*.

The form of the symbol of this day presents a number of minor variations, the more important of which are shown in plate LXIV, 18-26. Symbol 18 is the form given by Landa; 19-24, those found in the codices; 25 is from the left slab of the Palenque tablet or altar plate, and 26 is from the Tikal inscription.

So far as this character can satisfactorily be interpreted, where used otherwise than as a day symbol, the signification appears to be wind, spirit, or life, whether considered phonetic or not. As illustrations of its use, the following examples are presented:

At the right side of Dres. 72c are the three characters shown in plate LXIV, 27, 28, and 29, which follow one another downward, as shown in the figure, the three forming one of the short columns of the series to which they belong. From the lowest, which is the *ik* symbol, waving blue lines, indicating water, extend downward to the bottom of the division. If these glyphs are considered ideographic and not phonetic, it is still possible to give them a reasonable interpretation. The falling water shows that they relate to the rain storm or tempest. The uppermost character, which appears to be falling over on its side, we may assume to be the symbol of a house or building of some kind;¹ the dotted lines extending from its surface may well be supposed to represent rain driven from the roof. There is, however, another possible interpretation of this character which appears to be consistent with Mexican and Central American mythology. It is that it indicates a house, vessel, or region of the heavens which holds the waters of the

¹ American Anthropologist, July, 1893, pp. 263-264.

upper world. The turning on the side would, in this case, denote the act of pouring out the water in the form of rain. This supposition (although I am inclined to adopt the former) appears to be supported by the fact that this character is used in the Dresden Codex as one of the cloud or heaven symbols, as, for example, on plates 66 and 68. According to Ramirez, the Mexican wind and rain gods occupy a large mansion in the heavens, which is divided into four apartments, with a court in the middle. In this court stand four enormous vases of water, and an infinite number of very small slaves (the rain drops) stand ready to dip out the water from one or the other of these vases and pour it on the earth in showers.¹ As the lowest character in the group mentioned is the *ik* symbol, its appropriate rendering here is beyond question "wind;" therefore, as two out of the three characters, and the rain sign below, indicate the rain storm, we may take for granted that the middle character probably refers to lightning or thunder.

Additional reasons for this interpretation are given in a previous paper² and need not be repeated here, as the only object now in view in referring to them is to show that the *ik* symbol is there used to denote wind.

In the third and fourth divisions of plate 16* Codex Troano, five persons are represented, each holding in his hand an *ik* symbol from which arises what appear to be the sprouting leaves of a plant, probably maize (plate LXIV, 30, 31). This is interpreted by Dr Seler as the heart just taken from the sacrificed victim, the leaf-shape figures representing the vapor rising from the warm blood and flesh. It is unnecessary to give here his reasons for this belief, as the suggestion presented below, although wholly different, gives to the symbol in this place substantially the same meaning that he assigns to it, to wit, life, vitality. It is probable that the figure is intended to represent the germination of a plant—the springing forth of the blade from the seed—and that the *ik* symbol indicates plant life, or rather the spirit which the natives believe dwells in plants and causes them to grow. Seler's suggestion that in this connection *ik* may be compared to *kan* is appropriate, but this comparison does not tend to the support of his theory. Take, for example, the sprouting *kan* symbols on Tro. 29b, to which he refers. There can be no doubt that the symbol represents the grain of maize from which the sprouting leaves are rising (plate LXIV, 32). In one place a bird is pulling it up; at another place a small quadruped is attacking it; at another the Tlaloc is planting (or perhaps replanting) the seed.

In the lowest division of the same plate (Tro. 29) are four individuals, three of whom, as may be seen by studying the similar figures in the division above, are anthropomorphic symbols of corn; the other an earth or underworld deity. One of the former holds in his hands a *kan* symbol, which is colored to signify maize; the others hold *ik* symbols. There

¹ Historia de los Mexicanos, as quoted by Brinton.

² American Anthropologist, July, 1893.

are two interpretations which may be given this symbolic representation—one, that the *ik* glyphs are intended to denote plant life, that which causes plants to spring up and grow; the other, that they denote wind, which in that country was often destructive to growing corn.

Very distinct reference is made in the "Relacion de la Villa Valladolid"¹ to the injurious effects of winds on the maize crop. It is related in this report, which appears to have been of an official character, made in 1579, that—

From June till the middle of August it rains very hard and there are strong winds; from the latter date the rains are not copious and the wind blows strongly from the north, which causes much mortality among the natives, and Spaniards as well, for they contract catarrh and *barriga* (dropsy?). This north wind destroys the maize crops, which form the main sustenance of both natives and Spaniards, for they use no other bread.

There can be no doubt that most, if not all, of the figures on this plate (Tro. 29) are intended to represent the injurious and destructive agencies to which maize and other cultivated plants were subject. Birds and quadrupeds pull up the sprouting seed and pull down and devour the ripening grain; worms gnaw the roots and winds break down the stalks, one out of four escaping injury and giving full return to the planter. The latter is therefore probably the correct interpretation, the only difficult feature being the presence of the Earth god, which agrees better with the first suggestion.

It is to be observed that the series on Tro. 29c really commences with the right-hand group on 30c. The figure here holds in his hand an *ik* symbol. Following this, the left group on 29c shows a bird pecking the corn; the next, a small quadruped tearing it down; the next, a worm gnawing at the root of a plant; and the fourth, or right-hand group, a corn figure holding a *kan* symbol, indicating the mature grain, the uninjured portion of the crop. It would therefore appear that the *ik* symbol in this series denotes wind.

As additional proof that the symbol is used to indicate "wind," reference is made to Tro. 24a. Here the long-nose Rain god, or Maya Tlaloc, is seen amidst the storm, clothed in black and bearing on his arm a shield on which are two *ik* symbols (plate LXIV, 33), doubtless indicative of the fierceness of the tempest. In front of him is the Corn god, bending beneath the pouring rain. On plate 25, same codex, lower division, the storm is again symbolized, and the *ik* symbol is present here also.

It seems from these facts to be quite certain that the value of the symbol in the codices, so far as it can be satisfactorily determined, corresponds in signification with the Maya name.

Referring again to Dr Seler's theory that the plant-like figures on Tro. 15*, 16* indicate the freshly extracted heart and the vapor arising therefrom, the following additional items are noted: He says that in the text the scene below, or at least these sprouting-plant figures,

¹ Cong. Inter. des Americanistes, Actes de la Cuarta Reunion, Madrid, 1881, tom 2, pp. 173-174.

are expressed by hieroglyphs 27-29, plate LXVIII. His comparison with the so-called heart figures from the Mexican codices can scarcely be regarded as convincing, for there is hardly any resemblance. Moreover, he omits to furnish an explanation, on his theory, of the fact that some of these rising "vapors" are crowned with blossoms or fruit (plate LXIV, 31).

I think it quite probable that Dr Seler, although not accepting the theory of phoneticism, has been influenced to some extent by the form of the right-hand character of the glyph shown in plate LXVIII, 27. This is much like Landa's *o*, and *ol* in Maya denotes "heart, etc."

According to Brasseur, *oloh* signifies "a germ" and "to germinate;" *hokol* also has about the same meaning. This furnishes a consistent and appropriate explanation of the figures, and gives at the same time the phonetic value of the glyph. I have not determined the prefix satisfactorily, but presume it is some word having *ch'* or *tz'* as its chief phonetic element, which signifies "little," "plant," or something similar.

I have not determined the other symbols to which Seler alludes in this connection, but some of them, as may be seen by comparison with other passages, do not have special reference to the plant-like figures.

Whether the little sharp-corner square seen in the upper right-hand character of the compound symbols shown in plate LXVI, 28 and 55, and others of similar form, are to be taken as *ik* glyphs is yet an undecided question. Dr Seler appears to have excluded them from this category in his paper, so frequently referred to, though he subsequently brings them into this relation. But in these places he gives the glyph the signification "fire" or "flame." It is possible that in some of the cases to which he refers he is correct, as, for example, in regard to the figure shown in plate LXVIII, 30, from Dres. 25, where it is in the midst of the blaze. If so, the word equivalent must be *kak*, as it is seemingly a variant of *ik*, and hence may be supposed to have the *k* sound. This will agree with his interpretation of plate LXVI, 29, by *kinichkakmo*; but in this case we must give *ich* as the value of the so-called *ben* symbol. This, however, is not so very objectionable, as there are other places where the chief phonetic element of the *ben* glyph appears to be *i*. It is also to be remembered that it is much like Landa's *i*. It is likewise true, as will hereafter be shown, that the value *ben* does not appear to hold good where it occurs in combination with other symbols. However, until a satisfactory rendering of this little four-corner *ik* (?) symbol in some other place than the fire is found, I am hardly prepared to give full acceptance to Dr Seler's supposition.

The Zapotec names are somewhat difficult to bring into harmony with the others. Dr Brinton's solution is as follows:

In that tongue we have *uii*, air, wind; *chiic*, breath; which we may bring into relation with *gui*; and we find *guiieber*, wind-and-water cloud (*nube con viento y agua*). Dr Seler prefers to derive *gui* from *quii*, fire, flame, the notion of which is often associated with wind.

It was probably this notion and the fact that the little four-corner *ik* (?) symbol is sometimes seen in the flame, which caused this authority to believe the symbol denotes "fire," "flame." In the manuscript Zapotec vocabulary by E. A. Fuller, "wind" is *bii*.

Dr Brinton thinks that *ni* is the radical of *nici*, to grow, increase, gain life. He says:

Laa, or *laala*, is a word of many meanings, as warmth, heat, reason, or intelligence. The sense common to all these expressions seems to be that of life, vitality.

The form of the Mexican symbol for the day *Ehecatl* (wind), shown in plate LXIV, 34, and also of the mouths of the female figures on plates 26 and 28, Troano Codex, which are emblematic of the storm, appear to be taken from the bird bill. The bird, as is well known, is a wind symbol with many peoples. It has been so esteemed among several tribes of American Indians, and also by peoples of the Old World. As *nii* or *ni* signifies "nose, beak, point" in Maya and several cognate dialects, is it not possible that in this is to be found an explanation of the second Zapotec name? In this case, however, we must assume that the term is borrowed, as in this language *xi* or *rie* is the term for "nose." I notice, however, that the name for bird is given as *riqini* and *piguini*. If *pi* (*ri*) is a prefix, as seems probable from the word for "hen," *guitii*, then we have some ground for believing that the first Zapotec name has the same fundamental idea as the Mexican symbol.

It therefore would seem that it is not difficult to understand the origin of the Mexican symbol. Examining plate 10, Borgian Codex, which appears to represent the home of the winds, we see that, though mostly furnished with human bodies, they have bird claws as well as bills. But the origin of the Maya symbol is more difficult to account for. Dr Seler remarks:

It is difficult to determine the original idea of this character. Figure 210 [our plate LXIV, 24] and the forms on the reliefs—if we have correctly interpreted these—lead us to think that the wind cross, or the figure of the Tau resulting from it, was the origin of the character. However, the forms of the Cod. Tro. are not easily reconciled with this.

Dr Brinton¹ asserts, without heeding Dr Seler's caution, that it is the sign of the four directions or four winds—the wind cross—evidently alluding to the sharp-corner square seen in our plate LXVI, 28. But he seems to have overlooked the fact that it is never thus represented in the day symbol. Moreover, no satisfactory proof has been presented showing that this form has this signification. Seler gives it in some places, as above stated, the signification "fire," "flame;" and if his interpretation of plate LXVI, 29 by *Kinich-kakmo* be correct, as Brinton seems to think it is, his interpretations are consistent. However, Seler's assertion that "the forms of the Cod. Tro. are not easily reconciled with this" must be admitted. In the codices this glyph, as this author

¹Primer of Mayan Hieroglyphics, p. 115.

remarks, "rather brings to mind the idea of hanging," often resembling a bunch of grapes.

I take for granted the symbol, when standing for the day, is not pictorial or ideographic, but is adopted for its sound value. If this supposition be correct, then it must be a conventional representation of something the Maya name of which is *ik* or that has substantially this phonetic value. The form of the Mexican symbol, as above indicated, shows that in selecting it reference was had to the bird bill, to which possibly may have been added the idea of blowing forcibly from the mouth, a common method of indicating wind. (See for example the bird-mouth female, Tro. 25b, where the *Ik* symbol is present.) But it seems impossible to find in the symbol any reference to the bird, bird bill, or the act of blowing, or in fact anything indicating, even by a conventionalized figure, wind, air, spirit, or breath. Hence it is reasonable to conclude that it has been selected only because of the resemblance in sound of the thing it represents to the name *Ik*. I would be inclined to believe that the most usual form is the representation of a tooth or two teeth, the name being used for its phonetic value only, but for the very troublesome fact that I can find no name for tooth in Maya to sustain this view. If we could suppose it to be a conventionalized ideogram of an insect, we would obtain the desired sound, as Perez explains *ikel* by "bicho, insecto, polilla, gorgojo." It must, however, be confessed that none of these suggestions are satisfactory.

The following additional references to the bird as a symbol of the wind are appropriate at this point.

Not only is the day *Ehecatl* represented in the Mexican codices by a bird's head, but we see a bird perched upon a tree at each of the cardinal points on plate 44 of the Fejervary Codex. Birds are also perched on three of the four trees representing the cardinal points on plate 65 of the Vatican Codex.

In speaking of the myths of the Muyscas, Dr Brinton¹ says:

In the cosmogonical myths of the Muyscas, this [alluding to a certain name] was the home or source of light, and was a name applied to the demiurgic force. In that mysterious dwelling, so their account ran, light was shut up and the world lay in primeval gloom. At a certain time the light manifested itself, and the dawn of the first morning appeared, the light being carried to the four quarters of the earth by great black birds, who blew the air and winds from their beaks.

The Javanese also assigned a bird to each of the cardinal points, doubtless with substantially the same mythological concept.

Commenting on a passage of the Popol Vuh, in which the name *Toc* is mentioned, the same author² says:

The name *Toc* is that of a species of bird (Cakchiquel *Taku*). Coto describes it as having green plumage, and a very large and curved bill, apparently a kind of parrot. Elsewhere in the myth (page 70) it is said to be the messenger of Hurakan, resting neither in the heaven nor in the underworld, but in a moment flying to the sky, to Hurakan, who dwells there.

¹ American Hero Myths, p. 222.

² Names of the Gods in Kiche Myths, p. 22.

This is unquestionably the wind symbolized as a bird. The name for wind in Malay is *bayu*, and *Vayu* is a Wind god in Hindu mythology. Garud, the Bird deity of the Hindu Pantheon, who plays such an important rôle in the Mahabharata, and is so frequently termed therein "the foremost ranger of the skies," is apparently the Storm god, the equivalent of the Maya *Hurukan*.

We may remark incidentally that a curious coincidence is found in the fact that there appears to be a relation between the wind and monkeys in the mythology both of the Hindu and of the natives of Central America, or at least of Mexico. Hanuman, the Monkey god, who plays such an important part in the Ramayana, was the son of Pavana, the chief Wind deity. According to Brasseur, in his introductory essay to the *Popol Vuh*, it is stated in the Codex Chimalpopoca that the men were, on a day *Ehecatl*, changed by the wind into monkeys. On what peculiar mythological conception this idea is based I am unable to state.

THE THIRD DAY

Maya, *akbal*; Tzental, *rotan*; Quiche-Cakchiquel, *akbal*; Zapotec, *guila*; Nahuatl, *calli*.

The form of the Maya character as given by Landa is shown in plate LXIV, 35; those usually found in the codices are presented in figures 36 and 37 of the same plate. A slight variation which sometimes occurs in the Dresden Codex is given in plate LXIV, 38. In figure 39 of this plate circular dots take the place of the teeth. In another variant, shown in figure 40, there is a row of dots immediately below the broken cross line. The forms shown in figures 41 and 42 are from the inscriptions. As will be seen by comparing figures 36 and 38 with plate LXV, 64, this glyph, in some of its forms, resembles somewhat closely the *chuen* symbol, but is generally readily distinguished from it by the wavy line across the face and the absence of the little divided oblong at the top, which is mostly present in the *chuen* symbol. The lower triangle is usually sharp and extends to the top in the *akbal* symbol, while that in the *chuen* glyph is broad or rounded and does not extend to the top.

The signification of the Maya and Cakchiquel names, and also of the Zapotec, is "night" or "darkness." The Tzental name is that of a celebrated hero, which, according to Dr Brinton, is derived from the Tzental word *uotan*, "heart" or "breast." This explanation is accepted by Seler, as Bishop Nuñez de la Vega, the principal authority regarding this mythological personage, says that "in every province he was held to be the heart of the village." Dr Seler also adds that "'heart of the village' is in Mexican called *tepeyollotl*, and that is the name of the deity of the third day character, *calli*" (plate LXIV, 46).

The Mexican name *calli* signifies house. The method by which Dr Brinton brings this and the Tzental names into harmony with the idea of darkness or night is as follows:

The house is that which is within, is dark, shuts out the light, etc. Possibly the derivation was symbolic. Votan was called "the heart of the nation," and at

Tlazoaloyau, in Soconusco, he constructed, by breathing or blowing, a "dark house," in which he concealed the sacred objects of his cult. In this myth we find an unequivocal connection of the idea of "darkness" and "house."

Dr Seler's explanation is substantially the same; he differs somewhat, however, from Dr Brinton in regard to the derivation of the word *votan* (or *uotan*), as he obtains it from the Maya *ol, uol*, "heart, soul, will, etc," and *tan*, "in the midst," also "surface, level, extent, front." He concludes, therefore, if *uo* signifies heart, that *uotan* denotes "the inmost heart" or "heart of the expanse." It is proper, however, to call attention to the fact that Dr Brinton's derivation of the name in his "American Hero Myths" is slightly different from that given in his "Native Calendar," above mentioned. In the former he says *uotan* "is from the pure Maya root word *tan*, which means primarily 'the breast,' or that which is in the front or in the middle of the body; with the possessive prefix it becomes *utan*. In Tzental this word means both 'breast' and 'heart.'" It must be admitted that these explanations are apparently somewhat strained, yet it is possible they are substantially correct, as they appear to receive some support from the figures in the Mexican codices.

Plate 75 of the Borgian Codex, which is in fact the lower part of the figure on plate 76, heretofore alluded to, although having reference to the underworld, appears to be in part a delineation of night. The large black figure probably represents night, the smaller star-like figures denoting stars, and the large one the night sun, or moon. The house in the lower right-hand corner, with the black lining, is the house of darkness. The wind symbol above the roof indicates relationship with the winds. Dr Seler interprets these star-like figures as sun symbols, but the number found together on this plate forbids the supposition that they represent suns. Moreover, the association with the dark figure renders it probable that they are here used to denote stars.

There is, however, a lack in these explanations of a connecting link, which seems necessary to render them entirely satisfactory. The name appears to be intimately associated with that for serpent; or perhaps it would be more correct to say that this mythological personage appears to be intimately connected in some way with the serpent. The title of the Tzental manuscript containing the myth was, according to Cabrera, "Proof that I am a Chan," which signifies "serpent." His chief city was *Nachan*, "the house of the serpent;" his treasure house was a cavern. Simply designating him by "the heart of the nation," "heart of the village," does not appear to furnish a full explanation of his attributes or characteristics.

As the symbol of this day is frequently connected with cloud and rain-storm series, as in Tro. 25a, where it appears to be that from which rain is falling, its signification in these places would appear to be "cloud," which carries with it the idea of shade, shadow, and darkness. This being true, the most likely supposition in regard to the origin of the symbol is, that it was designed to represent the cloud breaking into drops and falling as rain—in other words, the weeping cloud. Such

appears beyond question to be its signification in Tro. 25a and in other places in the same and other codices. This supposition is also consistent with the fact that some of the symbols, especially those of the inscriptions (plate LXIV, 42), have dots along the broken line, which may indicate the raindrops into which the cloud is breaking. I am therefore not inclined to accept Dr Seler's supposition that it is intended to represent the opening to a cavern, after the conventional method adopted by the Mexican artists. It is improbable, though not impossible, that the older system may have adopted some features from the younger. Moreover, this supposition on the part of Dr Seler is in direct conflict with his statement in the immediately preceding paragraph. He says:

It is to be observed as applying chiefly to the manuscripts and the reliefs, that the two side points which project like teeth from the inner circle of the character could in nowise have signified teeth. Such an interpretation is contradicted by the occasional change of their position [plate LXIV, 47] and the fact that they also appear now and then exactly like eyes [plate LXIV, 39].

Now the Mexican cavern symbol, as shown in his figures and as given in Peñafiel's "Nombres Geográficos," appears to be the open serpent mouth with teeth and fangs. It is therefore more probable that the symbol was derived as above indicated. Among the Indian pictographs given by Colonel Mallery¹ as representing clouds are those shown in plate LXIV, 43 and 44. An Ojibwa cloud symbol² is shown in plate LXIV, 45, in which the circular outline denotest the sky. It seems quite likely that the Maya symbol is intended to convey precisely the same idea. On the left (bottom) of plate 70, Borgian Codex, is a curved or arch-like figure somewhat on the same order as those given. It appears to represent the sky—but darkened sky, indicating night or obscurity. On its upper surface are nine heads, which probably signify the "Nine Lords of the Night." Below it is a black figure. On each side are two figures, the color of the four differing—one blue, another yellow, another black, and the other red. These are probably the regents of the cardinal points.

If this supposition be correct, the symbol is purely ideographic and not phonetic or ikonomatic; but this does not forbid the idea that when used in other combinations it is used phonetically to give the chief sound element of the word indicated by the ideograph. Dr Seler claims, as corroborative of his supposition, that "all symbols which are combined with the name of the third character are to be fully explained through the word 'cavern.'" But it is far more likely that this (so far as it holds good) is due to the fact that the symbol is used because of its phonetic value or its chief phonetic element, *ak*, which is the same as the chief element of the Maya name for cavern—*actun*, *aktan* (Henderson, MS. Lexicon).

If this supposition be correct, it may furnish a clue to the name of the deity whose symbol is shown in plate LXIV, 48. Here the left-hand

¹ Fourth Ann. Rep. Bur. Eth. (1882-83), p. 238.

² Schoolcraft, "Indian Tribes," etc, vol. 1, pl. 51, No. 10, p. 360.

character is the *akbal* symbol (though not complete) surrounded by a circle of dots. This circle, Dr Seler contends, often indicates flames which consume the object it surrounds, or light which emanates from that object. If the whole is but a simple ideogram, it must be taken, as a whole, as indicating a particular mythological personage; otherwise it is in part phonetic, or given after the Mexican rebus method of denoting names. If not a simple ideogram, this prefix is most probably used in some sense phonetically with reference chiefly to the *k* sound. The circle of dots is used here probably to indicate the vowel sound *u* or *o*. But in making this suggestion I do not by any means intend to suggest that the Maya scribes had reached that stage of advancement where they could indicate each sound by a character. All I wish to assert is that I find in numerous cases characters accompanied by this circle of dots where the proper interpretation appears to be a word having as its prominent vowel element *u* or *o*. Hence the inference that there is some relation between this circle and these vowel sounds—this and nothing more.

In Dres. 16c is the symbol shown in plate LXIV, 49. This, as I have shown elsewhere,¹ represents the *kukuitz* or Quetzal figured below the text. Here are encircling lines of dots, and in the Maya name the *u* sound repeated; and here also is Landa's *ku*. In Dres. 47c the symbol for the month *Mol* is given as shown in plate LXIV, 50. Here again is seen the circle of dots, and the vowel appears to hold good in other places. We see it in Landa's first *o*. It will also assist us in giving at least a consistent interpretation to the strange character shown in plate LXIV, 51, which occurs repeatedly on plate 19 of the Tro. Codex. In the pictures below are individuals apparently, and as interpreted by most authorities, engaged in grinding paint or other substance or in making fire. The right half of the glyph, including the circle of dots and cross-hatching might, according to the value heretofore given these elements, be rendered by *huck*, "to rub, grind, pound, pulverize;" which certainly agrees with the interpretation usually given the pictures below. Possibly the whole glyph may be interpreted by *cecelhuchah*, "to triturate." While this, so far as it relates to the left portion of the glyph, is a mere suggestion, it agrees with the fact that the ornamented or cross-barred border is found in the symbol for *Cib*, and the three dots with Landa's *c*.²

¹American Anthropologist, July, 1893, pp. 258-259.

²Dr Brinton (Primer, etc, p. 9) explains it as the symbol of a drum. He remarks that "in a more highly conventionalized form we find them in the Cod. Troano thus [giving plate LXIV, 51], which has been explained by Pousse, Thomas, and others as making fire or as grinding paint. It is obviously the *dzacatan*, what I have called the 'pottery decoration' around the figures, showing that the body of the drum was earthenware." Yet (p. 130 and fig. 75) Dr. Brinton explains this identical group or paragraph as a representation of the process of making fire from the friction of two pieces of wood. It seems to me clear that this glyph represents something in the picture, and not the personage, as there is a special glyph for this. A comparison of the groups in the two divisions of this plate (Tro. 19) and plates 5 and 6 b of the Dresden Codex shows that the glyph refers to the work or action indicated by the pictures. That it refers to something in or indicated by the pictures, and that no drum is figured, will, I think, be admitted by most students of those codices.

In Tro. 11*d is the character shown in plate LXIV, 52. As the right portion is the upper part of the symbol for *chikin*, "west" (see plate LXIV, 53), its phonetic value may be a derivative of *kuch*, *kuchnahi*, *kuchah*, "to spin, to draw out into threads." Henderson gives *chuck* as an equivalent. As the suffix in plate LXIV, 48, is the character I have usually interpreted by *u*, this would give us some of the elements of the name *Kukulcan* and not *Itzamna*, as Seler and Schellhas suppose. Possibly, however, the deity represented may be *Baklum-Chaam*, the god adored at Ti-ho and usually considered, though without apparent justification, as the Maya Priapus.

The somewhat similar character, plate LXIV, 55, from Tro. 18*c, which Dr Seler considers synonymous, is probably essentially distinct, as it bears a somewhat stronger resemblance to the *chuen* than to the *akbal* symbol. In character 54, plate LXIV, from Dres. 17b, which denotes the vulture or rapacious bird figured below the text, it probably indicates the *e* sound, as the most reasonable interpretation of the symbol is *hchom*, "the sopilote" (Perez), or *hchuy*, "a hawk or eagle." If the character shown in plate LXIV, 54, is intended to indicate the bird figured below, and is neither of those mentioned, it is probably one the name of which begins with *ch*.

The symbol of the month *Zoo* (*Tzoz* or *Zotz*) also contains this supposed *akbal* glyph, but in the varied form last above mentioned, which, as we have said, bears a strong resemblance to the *chuen* symbol. This, as will be seen by comparing, bears a very close resemblance to glyph LXIV, 54. If phonetic, we must assume that the *ch* (if the interpretation of the former be correct) has been hardened to *z* or *tz*.¹

The same character is also found in the symbol for the month *Xul* (see plate LXIV, 56, from Dres. 49c). As Dr Seler refuses to accept the theory that the characters are either phonetic or ikonomatic, he concludes, in the following words, that resemblance in the forms of the symbols indicates relationship in the subject-matter:

Xul signifies the end, the point; *xmulul*, to end; *xulah*, *xulezah*, to bring to an end; *xulub* (that with which anything ends), horus, or he who has horus, the devil; *xulbil*, jests, tricks, deviltry. We see, therefore, that this word contains doubtless a reference to something unholy, uncanny, demoniac. To the Central Americans the bat was not merely a nocturnal animal. The Popol-Vuh speaks of a *Zo'tzi-ha*, "bat house," one of the five regions of the underworld. There dwells the *Cama-zo'tz*, "the death-bat," the great beast that brings death to all who approach it, and also bites off the head of Hunapu.

Instead of having to surmise this fancied relation, I think the explanation is to be found in the fact that similarity in the form of the glyph is indicative of a similarity in the sounds of the words represented. Here the *ch* becomes *x* (*sh*).

Dr Seler also calls attention in this connection to the animal figures in Dres. 36a and elsewhere, which are "represented as plunging down

¹Dr Brinton (Primer, p. 117) errs in regarding the superfix to this glyph as the *kin* or sun symbol.

from heaven with torches in their paws, and fire also issuing from the tassel-like ends of their tails, which doubtless denote the lightning, the death-dealing servant of the Chac." By the mention of this last word—*chac*—Dr Seler has shown that correct reasoning by a different line leads to precisely the same result as that which appeals to the phonetic or ikonomatic character of the symbol. Here again the *ch* sound appears as the chief element of the character. The rain or field deities, the *chaes*, are usually represented in the codices as dog or panther like animals; and *chuac*, "the tempest," and, according to Henderson, *chac* also, signifies lightning. But the relation of figures and phonetic value includes also the animal; *chacbolay*, "a savage tiger, a young lion" (Perez); *chachoay*, "a leopard" (Henderson); *chacoh*, "a leopard;" *chacckel*, "a tiger, jaguar;" *chac-ikal*, "the storm, the tempest." The similar figures in Tro. 32c probably symbolize the dry burning season which parches and withers the corn. The word is probably *choco*, *chocou*, or some related form.

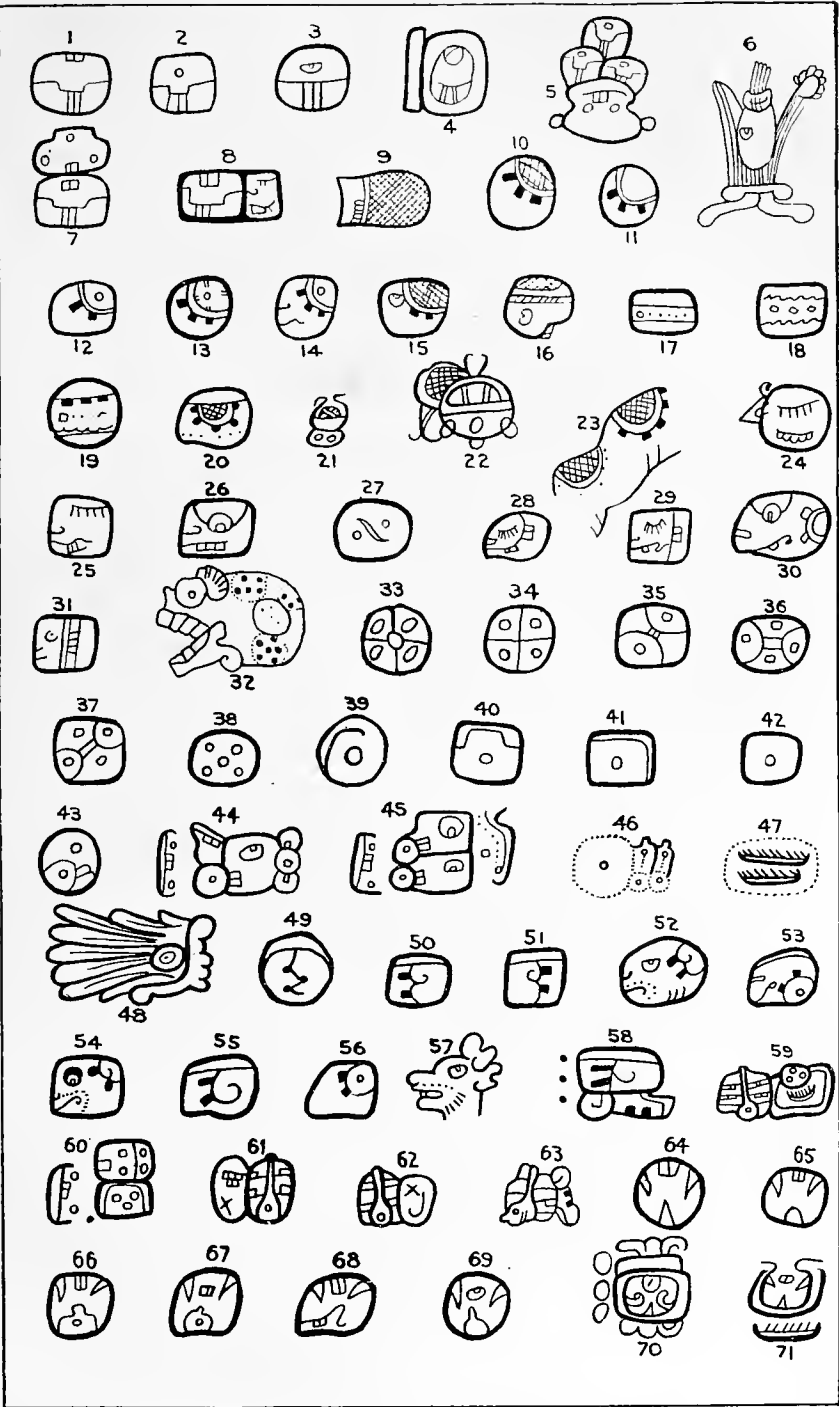
THE FOURTH DAY

Maya, *kan* or *kunan*; Tzental, *ghanan*; Quiche-Cakchiquel, *K'at* (*k'ate*, *k'atie*, *gatu*); Zapotec, *guache* or *gueche*; Nahuatl, *cuetzpallin*.

The Maya symbol of this day is subject to but few and slight variations. The principal forms are shown in plates LXIV, 57, to LXV, 3. That given by Landa is presented in plate LXIV, 57. The forms in the codices are shown in plates LXIV, 58; LXV, 1, 2, 3, that with the eye (LXV, 3) being the usual form given in Peresianus; LXV, 4 represents it as found on the right slab of the Palenque tablet.

The significations of the Maya word *kan* are various, as "yellow," "rope," "hamac," etc, and, according to Dr Brinton, the Tzental *ghanan* is the same word under a slightly different form. However, he contends that the original sense is to be found in the Cakchiquel word *k'an*, as given by Guzman (in a manuscript work in his possession), who says it is the name applied to the female iguana, or tree lizard. This, it is true, brings the signification into close correspondence with that of the Nahuatl term, but it is more than probable that the Maya and Tzental terms were in use before the application mentioned by Guzman was made by the Cakchiquel. It is noticeable, however, that in the list from Taylor's "Te-Ika-a-Maui," presented in the appendix, "lizards" are given as symbolic of one of the New Zealand days.

This interpretation, however, savors too much of an effort to bring the signification into harmony with the Mexican name. Moreover, it is difficult to explain the use of the Maya symbol on this theory, as it is undoubtedly frequently employed to denote the grain of maize. For example, it represents the seed from which a corn plant is springing, as on Tro. 29b (see plate LXIV, 32); and one figure in the same division represents a bird plucking it up, while another shows some small quadruped seizing it. It is also frequently represented in all the codices



COPIES OF GLYPHS FROM THE CODICES

as on a platter or vessel placed as an offering to some deity, and is often given a yellowish tint in these places. That the plant which arises from the symbol in these instances is the maize stalk is admitted by Drs Schellhas and Seler, although they do not seem to recognize the fact that the symbol represents the grain of maize which gives birth to the stalk. However, Dr Seler, in his subsequent paper above referred to, concludes that it refers to the seed, dropping his former interpretation. Both seem to recognize the whole glyph as a symbol of the stalk. Concerning this, Dr Seler says:

Indeed, we see in Cod. Mendoza the maize shoot employed to express the word *acatl*, "reed." I believe that the character *kan* repeats the Mexican idea, the maize stalk. This explains for us the reason why the character *kan*, as above pointed out, always appears among the sacrifices.

I fail to understand why this authority applies the symbol to the "stalk," when it is the fruit, the ear, the grain, which furnishes food, and may therefore be very properly used as the symbol of food.

In plate LXV, 5, is presented a copy of one of these corn offerings as found on Tro. 9*b. As the vessel containing the offering appears to be a vase, pot, or olla, it seems improbable that the offering it contains should consist of maize stalks. It is true, however, that instances occur, as on plates 21-23, Troano, where the stalk rises from the *kan* symbols contained in a vessel, but these are evidently given in a figurative sense, as the vessel rests on a serpent. But even here there is evidence that the symbol denotes the grain or ear, and not the stalk, as in the lower right-hand corner of plate 21 a human figure is represented as feeding a bird with the symbol, which can not be construed in this instance as representing the stalk.¹

Xi-men-es, who gives the Cakchiquel name as *cat*, says it refers to a net used for carrying maize, but means "lizard." Dr Seler, referring to this statement, says he strongly suspects that "the Mexican equivalent of this character has furnished him with this interpretation." He adds further that, in his opinion, "it has no connection with the Maya root *kan*, *kaan*, 'rope,' 'cord,' 'mat-cord,' and *kan*—Quiche-Cakchiquel, *k'an* (*gan*)—"yellow." He believes the Maya term is derived from *kaanan*, *kaanan*, which signifies "to be superfluous," "overflow," "to abound."

Dr Brinton thinks that the Zapotec *guache*, translated by Seler "frog or toad," is more likely a variant of *gurache* or *gorache*, "iguana."

It is apparent from these widely different opinions that the significance of none of the names, save that of the Mexican calendar—*cuetzpallin*, "lizard"—has been satisfactorily determined.

¹Dr Brinton (Primer, p. 116) says the object represented by this symbol is "a polished stone, shell pendant, or bead." This authority considers the dot or eye in the upper part as a perforation by which it was strung on a cord. If this be true, it is strange that we see them nowhere in the codices strung on strings, though necklaces are frequently represented; and that we do see them piled up in vessels, see them putting forth shoots and leaves, and see birds and quadrupeds devouring them. Dr Brinton himself (p. 123, E. No. 29) gives one of these eprouting *kan* symbols, which he says "is a picture of the maize plant from Cod. Tro., p. 29." That it is not used ikonometrically here is evident, as *kan* in Maya is not a name for maize or grain of maize.

In attempting to ascertain the signification of the names of the day, exclusive of the Mexican calendar, it is best to exclude from consideration at first the signification of the latter, and allow it to have no influence in arriving at a conclusion. The attempt by Dr Brinton to force agreement with the latter appears to be unsatisfactory.

I am inclined to agree with Dr Seler that the Maya symbol for the day *kan* and the Mexican symbol for *tecpatl*, "flint," are based on the same fundamental concept, if the flint-like symbols on plate 12 of the Borgia Codex, one of which is shown in plate LXV, 6, are *tecpatl* figures; of this, however, there is considerable doubt. Seler's opinion is based on those of this type. There can be no doubt that here this spindle-shape figure represents the shooting plant, the central stock or stem, or, what is far more likely, the seed which gives birth to the plant. Although they occupy the position of the stock or stem, yet from the form, the fact that some of them have the eye, and that from them the roots stretch downward, I am inclined to believe they are intended to denote the seed. The *kan* symbol, as above stated, is also represented in the codices as that which gives birth to the plant, as that from which the sprouting plant springs. It is probable, therefore, that it was originally taken from the grain of maize, which it fairly represents.

Now it is well known that "yellow" is one of the primary meanings of *kan*, and that the word is closely associated with fruit, the "yellow" referring in a large degree to the ripening fruit, especially of the maize plant. According to Henderson one signification of *kan* is "ripe, as fruit, timber," and, according to Perez, *kankanil* is "sazon en [que] las frutas, aunque no esten maduras por estar las mas tomando el color amarillo." In Cakchiquel *kan* (*gan*) signifies "yellow, ripe, rich." According to Otto Stoll, *ruich* (or *ruach*), which is almost identical with the Zapotec name of the day, is the word for "fruit" in several of the Maya dialects. According to the vocabulary of Cordova, as given by Ternaux-Compans, "yellow" in Zapotec is *nagache*, and in Fuller's MS. Vocabulary it is *na-gutchi*, the *na* being a prefix signifying "thing." The anonymous author, however, writes it *brechii*. We also notice that "gold" in this language is *yache*, probably referring to the color. It is likely, therefore, that the Zapotec name of this day signifies "yellow, ripe, mature," referring to fruits, especially maize.

When maize was introduced into New Zealand it was named *kanga*, probably after the Malay *tangkai*, the name for an "ear of corn." The Meztitlan name of the day is *Xilotl*, "an ear of corn," or "a young maize shoot." These facts seem to show that the symbol has some reference to maize, and tend to confirm the view expressed above, that the compound symbol shown in plate LXIV, 9, denotes "maize bread." The presence of the *kan* character in the symbol of the month *Cumhu* or *Cumku* or *Humku* (plate LXV, 7) is difficult to explain on the theory that it retains here the signification given it as the symbol of the day *Kan*, whether considered ideographic or phonetic, unless we suppose the

name is incomplete and should have *kan* added to it. I am somewhat disposed to believe that it is sometimes used alone to denote bread, and is then to be interpreted by *uah*. Take, for example, the figure in Tro. 30d. Here we see a dog seated on a *kan* symbol, with the same symbol taking the place of the eye. As *pek* is dog in Maya and *pecuah* the tortilla or bread of maize, and the compound glyph in plate LXIV, 9, is in the text, this may be an instance of the true rebus method of representing a word. Another instance of a similar character will be given under the day *Caban*. Possibly the *kan* glyph in the month symbol may have there the signification *uah*.

The fact must be borne in mind that this character, as before stated, is often, and perhaps most frequently, used, except where it indicates the day, merely as the symbol of corn or maize. As an example, take the compound character shown in plate LXV, 8, from Tro. 33c. In the picture under the text is the Corn god represented with the dead eye and bound with cords; above his head is a dog-like animal bearing burning torches. This representation, taken in connection with what is seen in the other divisions of the plate, appears, as heretofore stated, to denote the burning drought of summer, which is destroying the maize crop. As the right portion of the compound character is the *cimi* symbol, probably representing death, the whole character very likely indicates the dying corn. I have not found any combination where the rendering of the symbol by *kan* proves satisfactory. In fact, with the exception of the *kan-imix* combination heretofore mentioned, *kan* is very seldom combined with other glyphs, there being only some two or three in the Tro. Cod., and three or four in the Cortesian Codex. It appears, however, a number of times in combination in the Dresden Codex, but as yet I am unable to interpret any of them satisfactorily.

THE FIFTH DAY

Maya, *chicchan*; Tzental, *ubagh*; Quiche-Cakehiquel, *can*; Zapotec, *ci*, *ziie* or *guü*; Nahuatl, *cohuatl*.

The forms in which the symbol of this day appears are various and sometimes widely divergent. The principal ones are shown in plates LXV, 9 to 20. The form given by Landa is seen at 9; that most common in the Codex Tro. at 10. Other forms which frequently occur are shown at 11-13; those shown at 14-16 are from the Troano Codex. Some unusual forms which vary widely from the typical glyph are given at 17-20.

The change of a symbol to the face form, as seen in this instance at LXV, 15-16, does not appear to have any significance. The chief element of this character is the circular spot in the right portion, usually bordered by a double line and little square blocks, with the interior generally crosshatched. As the crosshatching is also found in the symbol for the month *Pax* (plate LXV, 22), it is probable, if phonetic, that this characteristic denotes the *x* (sh) or *ch* sound. As a similar

marking is frequently present on the serpent figures in the codices (plate LXV, 23), it is possible that its signification is *chan*, "serpent," or it may refer to some real or mythological characteristic.

The signification of the names of this day, except that of the Nahuatl calendar—*cohuatl*, "serpent"—appears to be uncertain. Perez says the word *chicchan* can be explained only by considering it to be incorrectly written for *chichan*, "little." Henderson in his lexicon writes it *chichan*, and gives as the meaning of the word, "new, young, as *chichan u*, the new moon." Dr Selser first suggested that the first part of the name might be derived from the root *chi*, *chii*, "mouth, to bite," and hence that the signification might be "the biting serpent." However, he subsequently concluded that the proper interpretation is "a sign marked or taken," from *chich*, "a sign or mark," and *ch'aan*, "something taken or carried away." Dr Brinton thinks there is much less difficulty in construing it as *chich*, strong or great, and *chan*, the generic Tzental term for serpent. The generic term for serpent in the Zoetzil is *cham*.

Dr Selser does not attempt an explanation of the Tzental term, but Dr Brinton says that it means in that dialect and in Cakchiquel, "luck, fate, fortune." This, he says, is identical with the Zapotec *ci*, *zii*, and *guii*, and, as he finds evidence that the serpent is mentioned as an animal whence portents were derived by the Zapotecs, thinks this furnishes the connecting link with the signification in other calendars. This explanation is so circuitous, and in fact strained, as to render it unsatisfactory.

A study of the symbol with reference to its origin may perhaps furnish some aid in arriving at the true signification of the name. As will be seen by reference to the various forms of the symbol, the bordering of the circular inclosed space appears to be more permanent than the inner markings. This is apparent from the fact that the little squares or blocks are retained in all the types except the anomalous forms shown in plate LXV, 16-18, and even in one of these (LXV, 18) they appear. On the other hand, the markings in the inclosed space are varied, and in some instances, as LXV, 11, are omitted altogether. It would seem, therefore, from this that the bordering was considered the essential element of the glyph. From what, then, is the symbol taken? If we turn to Dresden 25c, we see in the priest's robe, in all probability, that from which the symbol was derived. Here we have the inner cross-hatching and the little dark blocks or squares around the border. The same pattern is seen also on Tro. 16*b and c, and on the female dresses, same codex, 20*c and d. On the latter, in some cases, is the waved line seen in the unusual forms of the day symbol shown in plate LXV, 17, 18, and 19. Other examples could be referred to, but attention is called only to one more, viz, the curtain-like articles exhibited on Tro. 29*b, where we see not only the inner crosshatching and bordering blocks, but on the side borders the precise marking of the day symbol shown in plate LXV, 17.

As *chi*, *chii*, signifies not only mouth, but also "limit, border, margin, shore," and especially the "skirt or loose edge of a garment," the relation of the symbol to the name of the day is obvious. It is used here for its phonetic value—*chi*. As *chii* signifies "to bite, prick, to sting as a serpent," and *chan* denotes "serpent," the true explanation of the name of the day would seem to be "the biting or stinging serpent." This will perhaps justify us in supposing that where the symbol is found on a serpent it must have reference to this characteristic.

I had not observed when the above was written that Brasseur had expressed substantially the same view in regard to the origin of this symbol.

THE SIXTH DAY

Maya, *cimi*; Tzental, *tox*; Quiche-Cakchiquel, *camey*; Zapotec, *lana*; Nahuatl, *miquiztli*.

Landa's symbol for this day is shown in plate LXV, 24. The usual form in the Codex Tro. and Cortesian Codex is given in LXV, 25; it is varied frequently by an extension of the line from the mouth, somewhat as in symbol 28 of the same plate, which is the usual form in the Dresden Codex. A variation of this is seen at 29, which seems to have given rise to the unusual form shown in 31. A radical variation is that given at 27. The symbol of the Death god, 26 and 30, is sometimes, though rarely, substituted as the symbol of this day. The closed or dead eye and prominent teeth, as seen in the usual forms, show very clearly that the symbol is simply a conventional representation of the naked skull. The form shown at 27, however, is more difficult to account for; reference to it will be made farther on.

The Maya, Quiche Cakchiquel, and Nahuatl terms signify "death." The Tzental name *tox*, however, presents a difficulty not readily overcome in order to bring its signification into harmony with that of the others. Dr Seler does not attempt an explanation in his paper on the meaning of the day names, and in his subsequent article fails to reach any settled conclusion. Dr Brinton thinks it means something (as a human head) separated, sundered, cut off; "hence *tox-oghbil*, the ax or hatchet; *q-tox*, to split, divide, cut off." In this, he holds, it agrees precisely with the Zapotec *lana*, which, he says, the Zapotec vocabulary renders "a separated thing, like a single syllable, word, or letter." Dr Seler's interpretation of the Zapotec name is wholly different, as he says that the most natural of the various significations given is, in his opinion, "hare;" *pela-pillaana*, "liebre animal;" *too-quixe-pillaana*, or *pella-pillaana*, "red para liebres." I observe, however, that in Fuller's vocabulary *gu-lana* is "to steal." Other significations are "name," "flesh," "secretly," etc. The proper interpretation of the Zapotec name therefore appears to be very doubtful. In Cordova's vocabulary, as given by Ternaux-Compans, "fleche" is given as the

meaning of *quii-lana*. In Tzotzil *gtow* signifies "to split, break off, break open, to chop." In Maya we have *tok*, which, as a substantive, Perez explains by "pedernal, la sangria;" as a verb it signifies "to bleed, let blood." In this dialect *tox* denotes "to drain, draw off liquor, spill, shed."

The usual form of the Mexican symbol for this day is shown in plate LXV, 32. It is also a naked skull.

Like Dr Seler, I am compelled to admit that I can give no satisfactory suggestion as to the origin of the form shown in plate LXV, 27. According to Colonel Mallery,¹ one sign among the Indians for knife is to "cut past the mouth with the raised right hand," which, if figured, would probably bear some resemblance to the marks on this symbol.²

THE SEVENTH DAY

Maya, *manik*; Tzental, *moxic*; Quiche-Cakechiquel, *queh*; Zapotec, *china*; Nahuatl, *mazatl*.

The symbol for this day, shown in plate LXVIII, 31, is without any change worthy of notice, the only difference observable being a greater or less degree of perfection with which it has been drawn by the aboriginal artist. It is found, however, in various combinations where it is subject to variation in form, if these in truth be intended for this symbol. As Brasseur de Bourbourg has suggested, this appears to have been taken from the partially closed hand, where the points of the fingers are brought round close to the tip of the thumb. Whether intended to show the palm or back outward is uncertain, though apparently the latter. The nearest approach I find among the Indian signs figured by Colonel Mallery is that denoting "little, diminutive, small." But the position of the hand in the symbol appears to indicate the act of grasping; either signification gives *ch* as the chief phonetic element of the Maya word *chan* and *chichan*, signifying "little," and *chuc*, *chucak*, "to grasp, to seize" ("alcanzar, asir, prender," Perez); or *chuuc*, "to take, grasp, catch, seize," Henderson.³ It would seem from this that if the symbol is phonetic in any sense, the chief element of the word indicated is *ch*. The supposition by Drs Schellhas and Seler that this symbol sometimes contains the elements of the sign of the four winds or wind cross, appears to be without any real foundation. The partial cross-shape figure in it is merely the conventional method of drawing the opening between the fingers, and would be just as correctly given as an oval as an inverted tau.

As this interpretation of the symbol is quite different from that given by other writers, some evidence to justify it is presented here.

¹First Ann. Rep. Bur. Ethn., p. 386.

²Dr Brinton (Primer, p. 65) says: "Former students have been unable to explain this design" and suggests that it is a maggot.

³Brinton follows Brasseur in supposing it represents the "grasping hand," and thinks it is a rebus of *nuch*, "asir, tomar con los manos."

Attention is called first to the symbol for "west," shown in plate LXIV, 53. The lower portion is the recognized symbol for *kin*, "day" or "sun," and the upper portion is beyond question the *manik* character. As *chikin* is the Maya name for "west," we are justified in assuming that here at least this *manik* symbol is to be interpreted by *chi*, and is in some sense phonetic. As *china* is the Zapotec name of the day, and signifies "deer," and *chigh* is the Zotzil name for "deer," it is probable that the symbol preserves the old name, while in Maya this old name has been supplanted for some reason, or through some linguistic process, by *manik*.

Dr Seler calls attention to the character shown in plate LXVIII, 32, from Dres. 13c, which is repeated in the form LXVIII, 33, on plate 21b. That this refers to the deer figured below must be admitted, as this is clearly shown by the relation of the characters in the adjoining section to the animals figured below the text. Henderson (MS. Lexicon) gives *xolke* as "the male deer." If this could be considered substantially equivalent to *choleeh* in sound, our *manik* symbol would retain its value. The objection to this supposition is that the figure is probably intended for a doe instead of the male. Brasseur gives *chacyné* as the name applied to a small species of deer. It is true these interpretations leave out the numeral prefix; nevertheless they serve to show that it is probable the true name is a word which retains the phonetic value of the *manik* symbol as we have given it. Be the word what it may, two conclusions may be relied on: First, that it alludes to the deer, and, second, that one of its chief phonetic elements is *ch*. The character shown in plate LXVIII, 34, from Tro. 11*b, has probably the same element in its phonetic equivalent, for the Maya verb *hax* (*haxnahi*), "to twist or turn by rolling the thing between the palms of the hand; make cord used for muslin or cloth," etc, gives substantially this phonetic equivalent.

The character shown in plate LXVIII, 35, from Dres. 10b, is referred to by Seler as indicating an offering to the gods. In this he is possibly correct. As *tich*, in Maya, signifies an "offering," "a sacrifice," and *tich* (*tichah*) "to offer, present," etc, it is probable that in this instance also the *manik* symbol retains *ch* as its chief phonetic element. However, I am inclined to believe it refers to the collecting or gathering of the ripened fruit. In this case the prefix must be understood as a determinative indicating piling or heaping up, putting together or in a heap, or storing away. Of the Maya words indicating this operation, we note the following: *Chich* (*chichah*), *hich*, and *hoch*, each of which has *ch* or *ch* as its chief consonant element. This interpretation agrees very well with the fact that here, as elsewhere, a date is to be taken into consideration. On such a date, at such a time, the cacao is to be gathered, is to be harvested and stored away. Students of these codices, in their attempts at interpretation, appear, as a general thing, to overlook the fact that almost every paragraph or group of glyphs in the script is

accompanied by a date which must be taken into consideration in the interpretation. The symbol which follows immediately to the right, shown in plate LXVIII, 36, may be rendered *cacau*, the "cacao," as the duplicated comb-like character is Landa's *ca*.

As the Quiche-Cakchiquel, Zapotec, and Nahuatl names all signify "deer," the difficulty in bringing all into harmony lies in the Maya and Tzental names. Dr Seler's explanation is substantially as follows: That the word *manik* is from the root *man* or *mal*, which signifies "to pass quickly;" *manik* may therefore mean "that which passes by," "that which is fleeting." Dr Brinton gives the same explanation, and concludes that the deer is referred to metaphorically. In regard to the Tzental name *morie*, Dr Seler suggests that it may be founded on the root *max*, from which is derived *maxan*, "swift." Dr Brinton objects to this derivation, as *maxan* with the signification "swift" is from *ma*, "not," and *xan*, "slow, tardy," and suggests that the name is probably a corruption of the Nahuatl *mazatl*. However, it may be stated in favor of Seler's explanation, that Henderson gives *morán*, "quickly, shortly, without hindrance," which is apparently another form of *maxan*. Dr Seler, however, concludes, from a study of the relations in which the character is found in the codices, that it is the symbol of offering, of sacrifice, the deer being esteemed the animal most appropriate for this purpose. Henderson says *manik* signifies "calm," evidently considering it to be formed of *ma*, negative, and *ik*, "wind."

It is evident, therefore, that the authorities are at sea in regard to the signification of the Maya and Tzental names. If the symbol is used, as Seler claims, to indicate offerings or sacrifices, this may be readily explained on the supposition that it is used ikonometrically because of the phonetic value I have assigned it; but otherwise it is difficult, if not impossible, to see any relation between the symbol and the name given it. So far I have found it used in no place, in combination, where the value *manik* will give a satisfactory interpretation.

The following additional renderings are added here as tending to confirm the phonetic value assigned the *manik* character.

The character shown in plate LXVIII, 37, is from Tro. 20*c, where it is repeated four times. The figures below the text show women in the act of sprinkling or pouring water on children. Whether this be considered a religious ceremony or not, it is probably intended to denote purifying or cleansing, and not baptism in the modern acceptance of the term. As *choak*, according to Perez, signifies "to cleanse, purify, scour," and *choich* "to clean, scour, or wash the face," we have therein a quite appropriate interpretation of the symbol. The presence of the cardinal-point symbols renders it probable that the scene refers to a religious ceremony of some kind. The strict regard paid to the position relative to the cardinal points by savage and semicivilized people is too well known to require any proof here.

On Tro. 34*c two individuals are engaged in some work which we might suppose to be weaving but for the fact that there is no cord or

thread to be seen. Over each is the character shown in plate LXVIII, 38. This is evidently an incomplete *manik* symbol. As the supposed aspirate sign is present, it is probable that *hooch*, "to pare off, to scrape," or *hoochei*, "to pare off, or scrape the hennequin," will furnish an appropriate rendering.

THE EIGHTH DAY

Maya, *lamat*; Tzeutal, *lambat*: Quiche-Cakchiquel, *canel* or *kanel*; Zapotec, *lapa* or *laba*: Nahuatl, *tochtli*.

The various forms of the symbol of this day are shown in plates LXV, 33 to 37, and LXVIII, 39-40. * That given by Landa is seen in LXV, 33; it is also found very frequently in the codices as LXV, 34. The three other forms found in the codices are shown in LXV, 35, 36, 37. The form on the Palenque Tablet is given in LXVIII, 40; that of the Tikal inscription is similar to Landa's figure, if we are correct in our determination, of which there is some doubt, as the dots are effaced.

A comparison of plate LXV, 36, with the symbol of the day *Ahau*, shown in LXVIII, 5, leads at once to the impression that the former was derived from the latter, and that, if in any sense phonetic, the equivalents of the two are closely related. As will be shown hereafter, the *Ahau* symbol has *l* as its chief phonetic element, if it be considered in any sense phonetic. We should therefore expect to find, in the verbal equivalent of this *Lamat* symbol, *l* as a prominent element. In the form shown at LXV, 33, it would seem that we see an effort to intimate by the character itself the presence of the *b* element. That the symbol shown in plate LXV, 38, has *b* as its chief element is shown elsewhere. It is possible, therefore, that this *Lamat* symbol had no original signification purely its own, but that it is a composite derived from the *Ahau*, and what I have termed the *b* symbol. Without anticipating the proof that the *Ahau* symbol has *l* as its chief phonetic element, I call attention to the fact that it is the upper character in the symbol for *likin*, "east" (plate LXVIII, 12). As the lower character is the well-known symbol for *kin*, "day" or "sun," we must assume that the value of our *Ahau*, in this case at least, is *li*. As another suggestion, I would add that it may have been derived from a figure used in some game. As the figure is usually divided into apartments or cells, most of which inclose a dot, the Maya word *lem*, *lemah*, "meter, encajar, poner dentro, introducir" (Perez), would not inappropriately express the idea. Its use as a day symbol would then be simply for its phonetic value. This is based, of course, on the derivation I suggest below. Nevertheless it must be admitted that these are but mere guesses.

In his article so frequently referred to Dr Selser has little to say in regard to the signification of the names of this day. He remarks that "the word *kanel* is given by Ximenes—with what authority I know not—with the signification 'rabbit,' thus corresponding to the Mexican name for this character (Tochtli)." He says he is unable to interpret the words *lambat* and *lamat*. In his subsequent article he interprets

the Zapotec word by "to divide, to break into pieces," and remarks "that the concept of something divided, broken in pieces, lies at the foundation of the delineation of this day character is also proved by the Maya hieroglyph for the same [see plate LXV, 33 and 36], in which something divided or broken up is undoubtedly indicated." He adds that "perhaps also the terms *lambat* and *lamat*, used in Tzental-Zoetzil and in Maya for the day character, and which are hardly explainable from the well-known Maya, are derived from the Zapotec word *lapa*."

Dr Brinton's explanation is as follows:

The Maya *lamat* is evidently a shortened form of the Tzental *lambat*, which is composed of *lam*, to sink into something soft ("hundirse in cosa blanda," like light loam), and *bat*, the grain, the seed, and the name refers to the planting of the crops. The Quiche-Cakchiquel *kanel* is the name of the Guardian of the Sown Seed, probably from *kan*, yellow, referring to the yellow grains or maize. The Zapotec *lapa* or *laba* means a drop, and a crown or garland; here probably the latter, in reference to the products of the fields. The rabbit, in Nahuatl, is the symbol of ease and intoxication.

Thus, while Dr Brinton explains the name by "sinking in the mud or soil," Brasseur explains it by "sinking in the water."

It is much more likely that the Maya name is but a modification of *lamba*, which, as a verb, according to Henderson, signifies "to flash, to shine, etc;" and as a noun, according to Perez, "resplendor, brillo, relampago." I have no Tzental vocabulary at hand, but observe that in the closely allied Zoetzil, "relampagear" is given as the equivalent of *lemlaghet*.

It is a coincidence worthy of a passing notice that in Hawaiian *lama* and *pu-lama* signify "a torch;" *au-lama*, "to give light;" *malama*, "light from the sun or moon;" in Samoan, *lama*, "the candle-nut tree, and a torch made of the nuts;" in Tonga, *mama*, "light, a flambeau;" New Zealand, *rama*, "candle, light;" Tahitian, *rama*, "a torch."

It is somewhat singular that Dr Brinton, after his interpretation of the Maya name of the fourth day heretofore given, should in this instance derive *kanel*—the Quiche-Cakchiquel name of this day—from *kan*, "yellow," referring to the yellow grains of maize. However, it is quite probable that the reference to the color in this explanation is correct.

The traditions of the Indians in which the rabbit is brought into relation with the sun are well known. Dr Brinton has shown in his work on "American Hero Myths" that the Rabbit or Great Hare in the Algonquian myths symbolized "light." He remarks in "The Lenape and their Legends" that—

The familiar Algonkin myth of the "Great Hare," which I have elsewhere shown to be distinctively a myth of Light, was also well known to the Delawares, and they applied to this animal, also, the appellation of the "Grandfather of the Indians." Like the fire, the hare was considered their ancestor, and in both instances the Light was meant, fire being its symbol, and the word for hare being identical with that of brightness and light.¹

¹ Page 66.

It is possible that the Mexicans selected the rabbit for this day as a known symbol of light, thus bringing it into correspondence with the signification of the day names of the other calendars. The method by which Drs Seler and Brinton try to bring the Maya and Zapoteco names into harmony with the Mexican appears to me to be in the wrong direction.

It is therefore quite probable, from what has been shown, that the Maya, Tzental, and Quiche-Cakchiquel names refer to light, flame, or the lightning flash, and that the rabbit was selected because of some mythological relation it was supposed to bear to the sun, or light.¹ As this character is seldom found in combination, or used otherwise than as a day symbol, it is probable that the signification is represented by some other symbol, or is not referred to in the text.

THE NINTH DAY

Maya, *muluc*; Tzental, *molo* or *mula*; Quiche-Cakchiquel, *toh*; Zapoteco, *niza* or *queza*; Nahuatl, *atl*.

There are but few and slight variations in the form of the symbol of this day. That given by Landa is shown in plate LXV, 39. The usual forms in the codices are seen at 40-42 of the same plate. Symbol 43, which is an important variation, is from the Cortesian Codex.

The addition of the little circle and loop in example LXV, 43, from the Cortesian Codex, is important, as it possibly indicates that the simple forms given in plate LXV, 40-42, are incomplete, and may be a slight indication of phoneticism. If the latter supposition be correct, it is probable that in this additional feature we find the element 'e of the word. It is one of the characteristics of the *manik* symbol, which, as heretofore shown, has, in some instances at least, *ch* as one of its phonetic elements, whether considered truly phonetic or not.

This clue, if followed up, appears to furnish an explanation of some other characters in which the little circle and loops are found. For example, the character shown in plate LXV, 44 (Dres. 2 (45)b and c), apparently refers to the act of sewing or stitching indicated by the pictures below the text. As the circle and loops form an important part of the character, it is probable that *e* or *ch* is the chief or prominent element of the word. It is possible therefore, that *chuyah*, "to sew," or some derivative thereof, would be a proper rendering. The glyph shown in plate LXV, 45, from Tro. 11*c is a duplication of LXV, 44. As the appendix, as shown elsewhere, probably has *ah*, *ha*, or *hal* as its phonetic equivalent, we have, as the elements of the word represented by the whole glyph (omitting the prefix), *ch'-ch'ah*. As *choch* (*chochah*), Perez, and *chooch* (*choochah*), Henderson, signify "to loosen, untie, dis-unite, detach," this may be the true interpretation of the symbol. The presence of the eye in a symbol appears, as a rule, to have no special

¹Notwithstanding his definition given above, Dr Brinton suggests in his late work that the symbols of the day bear a close resemblance to some of the sun signs.

significance, as is shown by its presence sometimes in the symbols for the days *chicchan* and *oc*. It is worthy of note that Dr Seler introduces into his manik series the character above shown as having some relation to and being possibly a variation of that symbol. Before attempting to trace the symbol of the day in its combinations with other characters, with a view of ascertaining its original signification, reference will be made to the signification of the day names in the different calendars.

The signification of the Nahuatl word *atl* is water; the Zapotec names are also words for water. *Tohil* was the name of the principal Quiche deity, and appears to have been the god of thunder and rain, and, as Seler presumes, was the representative in these nations of the Maya Chac and Mexican Tlaloc. According to Brasseur, *toh* signifies "a heavy or sudden shower" or "thunder shower." Drs Seler and Brinton both derive the Maya and Tzental names from the radical *mul* or *mol*, "to join together, collect, heap up," and suppose it refers to the gathering together of the waters (that is, the clouds) in the heavens. This brings the signification of these two names into harmony with that of the names of the other calendars, and is probably a correct interpretation.

There are but few places where the symbol of this day is found in connection with other characters that I have been able to interpret entirely satisfactorily.

The compound character shown in plate LXV, 46, is from Dres. 16c. Judging by the evident parallelism of the groups in this division, this character is the symbol of the bird figured below the text. In this picture is easily recognized the head of the parrot. As *moo* is the Maya name of a species of parrot ("the macaw"), and the circular character of the glyph is like the symbol for *muluc*, except that the circumscribing line is of dots, we may safely accept this term as the phonetic value. The fact that the small character is double, as is the *o* in the word, is another indication that the rendering is correct, and probably accounts for the circle being of dots. (See above under *akbal*.) This interpretation appears to be further supported by the form of the symbol for the month *Mol* as found at Dres. 47c. (See plate LXIV, 50.)

The hint furnished by these characters may enable us to gain a correct idea of the signification of the dotted line which surrounds one of the characters in each group of Dres. 7c, one of which is shown in plate LXV, 47. As the inclosing line of dots appears in some cases (but not all, for in some instances *o* or *u* appears to form the chief phonetic element) to indicate *mo* or *mu*, it is possible that this glyph may be properly interpreted by *muhul*, "a gift, dower, present," or "to present a gift or dower, to offer a present." Hence the whole character shown in plate LXV, 47, may be interpreted "to make a gift of cacao."¹

¹For explanation of the inclosed comb-like characters, Landa's *ca*, see Sixth Annual Report of the Bureau of Ethnology, page 355.

The usual form of the Mexican symbol of this day is shown in plate LXV, 48, the leaf-like portion being blue in the original to indicate water. In regard to the origin of the character, Seler remarks: "If the Maya character agrees with the Mexican (*atl*), we must look upon it as a water vessel." Yet after a number of illustrations and references he declares: "I by no means affirm that the *vessel* is expressed by the form of this character. The form seems to me to express rather the water drop."

It is more likely that it represents a little circular hillock, seen from above, or something of that nature surrounded by a ring, as the significations given the Maya word *mul* are "hillock, heap, mound, mountain, ants' nest, etc." However, if Henderson is correct in giving as one of its special meanings "out of many one," its origin may readily be seen. That it was taken from some object which could be designated by the word *mul* or *mol* may confidently be assumed. Hence the symbol is used for its phonetic value as a day character and not with any reference to the object represented. The little circle and loops seen in plate LXV, 43, from the Cortesian Codex 30b, are probably, as heretofore stated, introduced to give the *c* sound. Dr Brinton suggests that it represents one thing in another of the same kind, with a reference to collecting together or heaping up.

THE TENTH DAY

Maya, *oc*; Tzental, *elab*; Quiche-Cakechiquel, *tzi*; Zapotec, *tella*; Nahuatl, *itzeuintli*.

The symbol of this day as given by Landa is shown in plate LXV, 49. This is substantially the usual form found in the codices as given in LXV, 50, 51, 55, the first two being usual in the Troano, Cortesian, and Peresian codices, and 55 in the Dresden. In a few instances, as Tro. 12a and 12c, it assumes the face form 52. The face form shown at 54 occurs in the Dresden Codex, as do the variations seen at 53 and 56.

Dr Seler and Brasseur contend that the forms shown in plate LXV, 52 and 54, make it evident that the broken line, which is the chief characteristic of the glyph, is intended to represent, or rather is derived from, the ear of the dog. This, Seler says, is frequently represented in the Mexican codices, and also many times in the Maya manuscripts, with the tip of the ear torn away. To illustrate this, he presents several figures of dog's heads, one of which is shown in our plate LXV, 57.¹

There would seem to be some foundation for this supposition, yet there are difficulties in the way of its acceptance which appear unsurmountable. The first of these is that it furnishes no explanation or clue to the relation between the symbol and the Maya or Tzental name. Second, it does not appear to have been used in any instance as the symbol of the dog, which seems to be a fatal objection, if it is assumed to be merely ideographic. Third, it renders only more difficult any explanation of the character shown in plate LXV, 58, which is of such

¹Brinton thinks that in some of the forms it indicates "a trail" or "footprints," which are meanings of *oc*.

frequent occurrence in all the codices. If a satisfactory interpretation of this glyph could be found, it would assist greatly in deciphering the codices. I am rather inclined to think it is a sign of repetition—as “repeat thrice.” If there were some word for *ear* which could be connected with *oc* or *elab*, then we might suppose the symbol to be used phonetically. However, as this can not be found, some other explanation must be sought.

The Nahuatl and Quiche-Cakechiquel names are the ordinary terms in these languages for “dog,” and the Mexican symbol for the day is the head of a dog. Dr Seler does not attempt to explain the Tzental name, and merely suggests that the Maya word *oc*, “foot, footprint, track,” and as a verb, “to enter, to go into,” may have been adopted by the priests as expressing a prominent characteristic of the dog. Dr Brinton is inclined to derive the name *oc* from the verb *ocol*, *oclah*, “to steal, to rob,” rather than from *ocol*, “to enter,” supposing it to have been selected as indicative of another characteristic of the dog. This he believes also to be the signification of the Tzental term *elab*. This it seems to me is again reversing the order, unless we assume that the Quiche *tsi* and Mexican *itscuintli* are the older terms.¹

Dr Brinton says that according to Bartolomé de Pisa the Zapotec name signifies “dog,” though he does not find it with this meaning in the vocabularies. Dr Seler, however, obtains the signification “dog” for this name by supposing that it is derived from *tee-lao*, “month downward,” referring to some myth of a dog representing the lightning, or lightning demon, as falling or plunging downward from the sky in certain figures of the codices. This, Dr Brinton says, “seems strained,” which may also be said of the explanations of the Maya name.

The symbol of the dog as found in the Dresden Codex (13c), and as admitted by Dr Seler, is shown in plate LXV, 59. The same symbol is found in the same codex, 21b. Now, I think it possible to show, with a considerable degree of certainty, what is the chief phonetic element of this symbol, at least of its first or left-hand character. In plate LXV, 60, from Tro. 22*a, is seen (omitting the prefix) substantially the symbol that Landa interprets *le*, “the lasso,” and also “to lasso.” As the lower character is his *e*, we may take for granted that the upper portion indicates the *l* sound; further evidence of this, however, will be presented under the twentieth day. As this is followed by the symbol seen in plate LXV, 61, which refers to the “turkey” (*kutz* or *cuitz*),² and the figure below the text shows a snared turkey, the interpretation appears to be appropriate. Turning now to Dres. 44 (1)c, we notice in the picture below the text the compound glyph shown in plate LXV, 62.

¹I was not aware that *oc* had the signification “dog” in any of the Mayan languages, nor do I find that Seler or Brinton appeal to this fact in their efforts to explain the day name in the Maya calendar. However, Dr Brinton remarks that Brasseur and Seler think that some forms of the symbol “portray the ears of a dog, as in some of the Mayan dialects the dog is called *oc*.”

²Dr Brinton (Primer, p. 95) says that this is called “an article of food, by Thomas.” While this is correct in the sense that I speak of the turkey (*kutz* or *cuitz*) as food, it is incorrect in giving the impression that I interpret the symbol by “article of food,” as I have always interpreted it “turkey.”

Immediately below it is the figure of a fish, which the two individuals represented are trying to catch in a seine. As this contains the same elements as 61 (plate LXV), reversed, the phonetic value should be *tz'e*. Referring to Perez' Lexicon, we find that *tzac* is a fish "so named;" Brasseur says, "a little fish resembling a sardine which inhabits the senotes."

Now these give *tz'* as the chief phonetic element of the left character of the dog symbol (LXV, 59), which is also the consonant element of the name for "dog" (*tzi*) in the Tzental, Cakchiquel, and most of the Maya dialects, though not of the Maya proper. This furnishes a consistent and appropriate rendering of the left portion of the symbol. Although the symbol for the month *Kankin* (LXV, 63) presents a difficulty, it is possible some other name was applied to this month of which *tz* was a leading element; Yaxkin is sometimes written with the prefix *Dze*.

As *och* is the Maya name for the "male fox," and *oquil* or *ocuil* is the name in Tzental and Tzotzil for "wolf," it is possible the Maya name may have been derived from one of these. Moreover, it is worthy of notice that "foot" in Tzotzil is written *oquil* as well as *oe*.

I was at first inclined to adopt Dr Seler's suggestion that the distinguishing feature of the symbol might have been taken from the dog's ears as given in the codices. However, a more thorough examination leads me to doubt this suggestion. The little black dots or blocks on the bent line appear here, as in the *chiechan* symbol, to be the most prominent and essential elements of the symbol. As they do not appear in the ear figures, it seems impossible that the character should have been derived from these figures. It is more likely that they represent the knots on a string or cord; and this supposition appears to be sustained by the fact that the Maya word *hok*, according to Brasseur, signifies "a knot, hook;" and *hokal* "to be knotted, formed of knots." Perez says "*hok*, el lazo formado para anudar;" "*hokol*, lazarse para anudarse la cuerda." If this supposition be correct, the symbol is used for the day because of its phonetic value, and without any reference to its original signification.

THE ELEVENTH DAY

Maya, *chuen*; Tzental, *batz*; Quiche-Cakchiquel, *batz*; Zapotec, *loo*; Nahuatl, *ozomatli*.

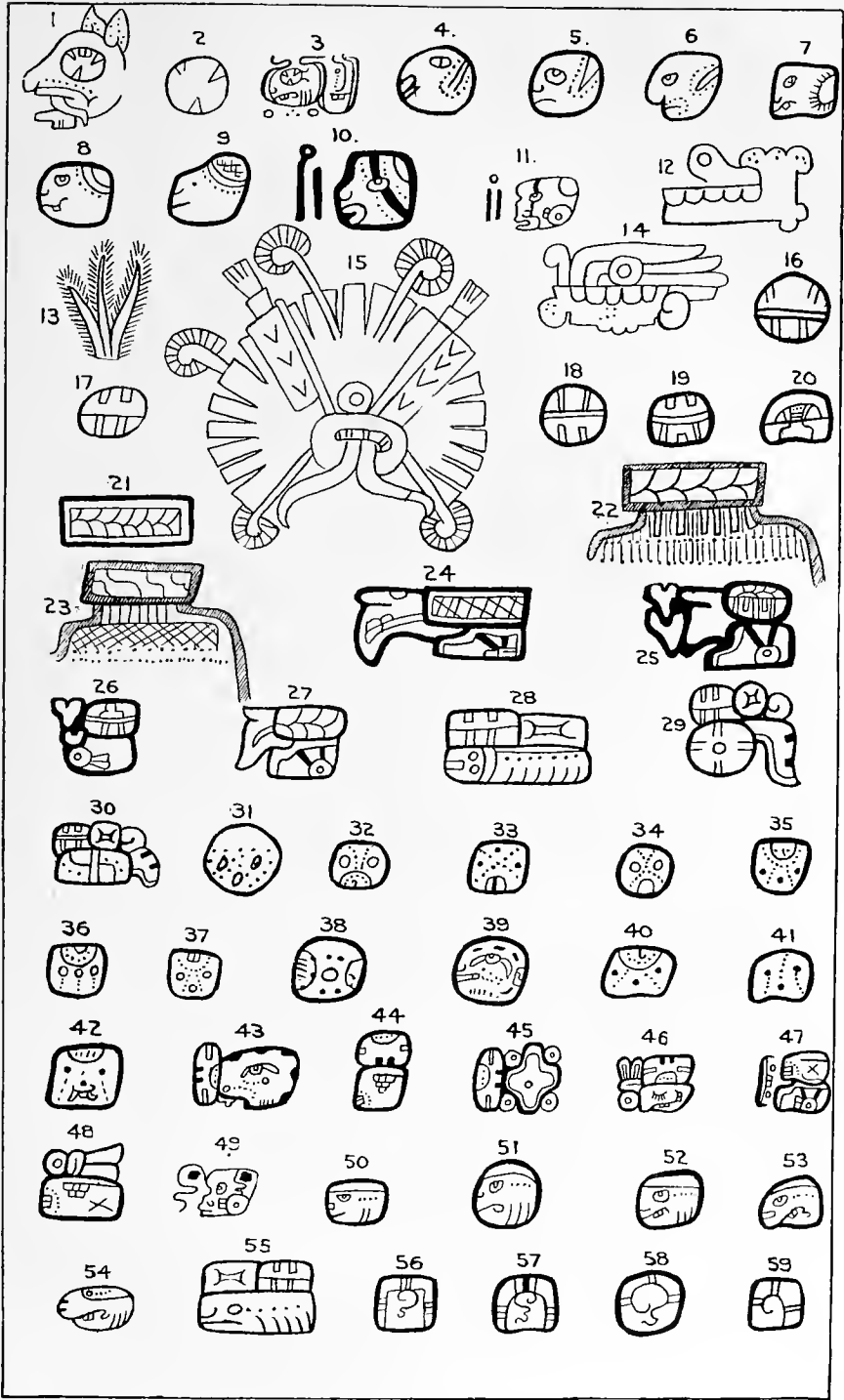
The symbol of this day is subject to few and slight variations. The form given by Landa, which is also quite common in most of the codices, especially Tro. and Cort., is shown in plate LXV, 64. Slight variants are shown in LXV, 65, 66, and 67. An exceptional and peculiar form from Dres. 32b is seen in LXV, 68. A form from the Perez codex in which an eye is introduced is given at LXV, 69. The character on the Palenque Tablet and some other inscriptions, which is supposed to be the symbol of this day, is shown at LXV, 70, but the proof that it is, in these cases, the day symbol is not so conclusive as that in regard to

other day symbols, as no method of bringing it into relation with the other time symbols of the inscriptions has been found.

A closely corresponding form is seen in the symbol for the month *Tzec* as found in the Dres. Codex (see plate LXV, 71). If the glyphs are in any sense phonetic, it is probable that in the comb-like appendage to this symbol (Landa's *ca*) we have the 'c ('k) sound, and that the variation in the main character from the usual *chuen* glyph (in having the bounding line open and turned right and left at the top) is indicative of the variation in the phonetic value. The explanation of the symbol, which replaces the eye in the dog or panther like figure in Tro. 32c and 33c, and is alluded to by Dr Seler in this connection (LXVI, 1), has already been given under the discussion of the "Third Day." There, as I have shown, it probably indicates the Maya word *choco*, "heat, warmth," alluding to the hot, dry season which parches and shrivels up the growing corn. This explanation retains the phonetic value of the symbol, and it appears also to be entirely consistent with the figures found in connection with it.

There is another symbol closely allied in form (plate LXVI, 2) which is of frequent occurrence in the codices, usually, and, in fact, almost exclusively, in the picture spaces, and apparently bearing some relation to the offerings. It is often in groups, and is many times repeated in groups on the so-called "title pages" of the Tro. and Cort. manuscripts. It, however, frequently occurs in the form seen in the dog's eye (LXVI, 1), grouped as the other (Dres., 25a, etc) and undoubtedly used as an equivalent, as we find numerals attached as with the other form. The only distinction, as will be observed, is the presence or absence of the little divided square at the top. As that with the divided square is more detailed, it is probably the correct form, and, if so, can not be distinguished from the *Chuen* symbol.

On Dres. 29b, 30b, and 31b the symbol shown in plate LXVI, 3, is found in each group of characters. This bears a close resemblance to the symbol for the month *Tzec*, but varies in some important respects, as will be seen by comparison. The appendix, as I am inclined to believe, gives the *ah*, *ha*, or *hal* sound, and shows that it is a verb or word indicating action. As we find in each group the figure or symbol of a food animal, the whole series may be supposed to relate to feasts, or eating, or the collection of food. This suggestion is strengthened by the fact that the *kan* or maize symbol is placed in connection with the animal figures. It is possible, therefore, that this character may be correctly rendered by *tzielim* (*tzielimtah*), "to distribute, share, divide among many." As it is followed in each case by a cardinal-point symbol, and the symbol of the double tongued or toothed deity, probably Itzamna, is found in each group, it is probable that the text relates to religious festivals. This interpretation, however, is a mere suggestion or guess, which as yet I am unable to fortify by any other evidence than the resemblance of the main character to the *Tzec* symbol.



COPIES OF GLYPHS FROM THE CODICES

The Nahuatl, Tzental, and Quiche-Cakchiquel names of this day are the ordinary terms in these languages for "monkey." Dr Brinton thinks the Maya name, which does not appear to have any signification in this language as a separate word (though *chuenche* is "aborao, tube," "a certain tree"), is derived from a Tzental term, *chiu*, which is applied to a particular species of monkey. He and Dr Seler refer to the *chouen* in a legend of the Popol Vuh, which undoubtedly stands in close relation to *batz* or "monkey," there spoken of as *hunbatz*. As these words in the Quiche myth appear unquestionably to refer to a species of the monkey tribe, or mythical persons under the symbolism of monkeys, the conclusion they reach is probably correct, and justifies the belief that the Maya name should be interpreted "monkey."

The origin of the symbol is uncertain, and Dr Seler makes no attempt to explain it. The difference between the simple form with the three teeth only (plate LXVI, 2) and the typical *Chuen* symbol indicates a difference in the word equivalents, or in the signification if ideographic. It is possible that Brasseur is right in rendering the former by *co*, which signifies "tooth;" in which case we may be justified in assuming that the additions in the *Chuen* symbol give the additional phonetic elements in the word. It may be, as supposed by some authors, that it was intended to represent the front view of an open mouth of some animal, as *chi* is the Maya word for mouth.

THE TWELFTH DAY

Maya, *eb*; Tzental, *euob*; Quiche-Cakchiquel, *e* or *ee*; Zapotec, *pija*; Nahuatl, *mallinalli* or *itlan*.

There are comparatively few variations in the symbol of this day; some, however, are of sufficient importance to render recognition doubtful but for their presence in the day series. That given by Landa is seen in plate LXVI, 4; the form most usual in the Tro. and Cort. codices is that shown in LXVI, 5; the variations seen in LXVI, 6, 7, 8, are from the Dresden Codex, and that in LXVI, 9, is from the Peresianus.

This character occurs very seldom, if ever, except as a day symbol, hence it is presumed to be purely ideographic or pictorial. There is, however, a deity symbol found in the Tro. Codex (plate LXVI, 10) in which we see apparently the chief characteristic of the *eb* symbol. Here, however, instead of a dot-bordered tooth, there is a dot-bordered dark stripe which runs downward entirely across the face. This is accompanied usually by the numeral prefix 11. The symbol of the same deity as found in the Dresden Codex is shown in plate LXVI, 11. Here the stripe is reduced to a single broken line. Dr Schellhas contends that he is a Death god and the equivalent of the Mexican Xipe. That he is a god of the underworld in the Tro. Codex is apparent from his ornaments and the dotted lines on his body or limbs; yet in two instances—plates 5 a and b—he is represented as a traveling merchant. Whether the deity in the Dresden Codex is the same as that of the Tro. Codex

is not positively certain, but the presence of the numeral 11 with the symbol, and in some instances the dotted lines on the body of the deity, indicate that the two are identical. Whether this deity glyph bears any relation to the day symbol is, however, doubtful. The only names of Maya deities I find with *buluc* ("eleven") as a prefix are Ahbuluc Balam and Buluc-Ahau (?). The first, which signifies "He of the Eleven Tigers," was one of the idols made at the festival of the new year Canac. On one of the four plates of the Dresden Codex representing the festivals of the new year (26a) we observe that the image carried by the chac is a tiger-like animal marked with dotted lines. Whether this is to be connected with the deity above mentioned is doubtful. The other name, Buluc-Ahau, mentioned by Landa, is the name of one of the signs of the Katun given in his figure of the cycle, and, although he uses the word "idol," does not appear to refer to any particular deity.

In regard to the names of the first three calendars, Dr Seler remarks as follows:

E, ye signifies "the edge," "sharpness," "the notch;" *eb, ebil, ebal, yebal*, "a row of notches," "flight of steps," "stairs." In Quiche-Cakchiquel *e* signifies "the tooth," "the edge;" *ee* is the plural form in Cakchiquel of the word, as *eeb* of the Quiche; *euob* is also a plural form in the Tzental, as I think, from a singular *eu-ee*. The name must denote the same thing in all the languages, i. e., "a row of teeth," "flight of steps"—a signification which harmonizes excellently with many Mexican forms of the character [plate LXVI, 12] as well as with the Meztitlan name of it (*itlan*, "his tooth").

Dr Brinton says that "in Maya *eb* is the plural of *e*, which means 'points' or 'ends,' like those of pins or thorns, and plainly was intended to designate the broom by reference to its numerous points. From the same idea, rows of teeth received the same name. The Tzental and Quiche names *e* and *euob*—the latter a plural—were from the same radical and had the same signification." He says the Nahuatl and Zapotec names both signify the brush or broom of twisted twigs, or stiff grass used for cleaning and dusting, and also this grass itself. Thus he brings the names of the five calendars into harmony. This explanation corresponds with that given by Clavigero of the Mexican term, which he says is the name of a certain plant of which brooms were made.

I am inclined to believe the symbol in this instance is a mere pictograph intended to represent the tip of some lanceolate leaf, the dots denoting the hairs along the edge. The tips of the "reed grass," as shown in the symbolic representation of *Zacatla* ("Nombres Geográficos" by Peñafiel; plate LXVI, 13), would give precisely the dot-bordered tooth in the symbol. It is to be observed, however, that the Mexican symbol for this day, the usual form of which is shown in LXVI, 14, is essentially different and has joined with the green blades the skeleton underjaw. In some instances, as at *Malinaltepec* ("Nombres Geográficos"), the entire skull is added. A more elaborate form of the symbol, from the Borgia Codex plate 26, is given in LXVI, 15. Here the skeleton jaw is

replaced by the roots of the plant; observe, however, the brush-like projections above. Are we to see in this associated death's-head a reference to death, or rather to the earth, a symbolism undoubtedly found in the Tro. Codex? Or must we suppose that behind the name is to be found the signification of the Meztitlan name *itlan*, from *tlantli*, "tooth?" Dr Seler remarks that "it seems to me quite possible that the point surrounded by dots in the character *eb* is an abbreviation of figure 326" (the prefix to our plate LXIV, 48).¹

THE THIRTEENTH DAY

Maya, *ben* or *been*; Tzental, *ben*; Quiche-Cakchiquel, *ah*; Zapotec, *quii*, *ii*, or *laa*; Nahuatl, *acatl*.

The symbol of this day is subject to but few and, with one or two exceptions, but slight variations. Landa's figure is represented at LXVI, 16, those usual in the codices in LXVI, 17, 18, 19, and an irregular form found in Dres. 10c in symbol 20 of the same plate. When used in combination with other glyphs and otherwise than as a day symbol, the form, though usually typical, is subject occasionally to wide variations, though there is considerable doubt whether the latter are to be considered *ben* symbols.

Dr Seler contends that the figure originated from the plaited reed or mat, which, if correct, enables us to trace it by gradations to a wholly different figure. But before referring further to these, it is best that the signification of the names should be given as determined by linguistic evidence.

The Nahuatl name *acatl* signifies "reed," "cane," or "stalk;" and, according to Ximenes and Brasseur, the Quiche-Cakchiquel *ah* also signifies "reed," especially the "cornstalk" or "sugar cane." The Zapotec *quii* has also the same signification, "reed," and Dr Brinton says *laa* has the same meaning, but Dr Seler says he can not find it with this signification in the lexicons, nor do I find it in any to which I have access. The Maya and Tzental *ben*, however, presents a more serious difficulty in the attempt to bring it into harmony with the others. Dr Seler contents himself with reference to certain words which have *been* or *ben* as their root. This root, he says, signifies "consumed," and the words to which he refers mean "to be consumed," "to waste away," "to fail, be lacking, go away." This is also the signification to which Dr Brinton refers. "I find," he says, "that in Tzental the dried cornstalk (*caña de mais seco*) is called *cagh-ben*, and from this I doubt not this day-name in that dialect and the Maya was taken and synecopated. The verb *ben* or *been* in Tzental means 'to walk, to go,' but in the above compound the *ben* is from the Maya stem *benel*, 'to be used up, to be dead.'"

The opinion of Dr Seler, above stated, that the symbol of this day originated from the delineation of the plaited reed or mat, is based on

¹ Dr Brinton says it is the face of an old woman with a peculiar pointed earmark.

the representation of the mat both in symbols and figures in the Mexican and Maya codices. Some of these are shown in our plate LXVI, 21 to 24. The first, 21, is from the Mendoza Codex, and is found also in Tro. 20*d. These are undoubtedly intended to denote mats or something of a kindred nature. The same figure is seen on the roofs of temples and houses, one of which is shown in LXVI, 22, from Tro. 10*c. In these instances they appear to indicate the thatching with which the roof is covered. The form is sometimes varied, as in LXVI, 23, from Tro. 10*a. The symbol which, it is presumed, refers to the mat as seen in Tro. 21*d, is given in LXVI, 24; that representing the house in Tro. 10*c is seen in LXVI, 25; another of a slightly different form, from Tro. 7*c, in LXVI, 26; and another, referring also to a house or to the roof, as Dr Seler supposes, is given in LXVI, 27.

There can be no question that plate LXVI, 21, is intended to represent a mat or something of that nature, nor that the character shown at 24 is the symbol used to represent this mat, straw, or plaited fabric; nor can it be doubted that the figures shown at 22 and 23 are conventional figures for houses of some kind. It must also be admitted that the characters shown at 25, 26, and 27 are symbols denoting these houses. According to Dr Seler's interpretation, figures 24 and 27 are, in some cases, used "to denote a seat on a mat [24]; sometimes the mat roof of the temple or the temple itself" (27). In his opinion these characters, especially 27, contain "the element of the mat and a symbol of carrying—the hand or elements which have been borrowed from the figure of the hand—and in these hieroglyphs the transition of the realistically delineated mat into the character *ben* may be distinctly traced."

That the upper part of plate LXVI, 25 and 26, and of other similar figures in the codices which might be shown, do make a close approach in form to the *ben* symbol, must be admitted. But there is one break in the chain which needs to be closed before the evidence is entirely satisfactory. Does the upper part of these house symbols (25–26) indicate roof mats or thatching? An examination of the house figures shows these supposed mat figures to be something standing on the top of the roof—something rising, as it were, perpendicularly along and above the comb or crest. Now, precisely such battlements or elevated crests appear to have been common on the roofs of the temples or structures which have been preserved to modern times. We see them in the figures given by Charnay, Stevens, and other explorers; and what is worthy of special notice in this connection is, that they sometimes consist of openwork or trellis-like figures. Therefore, if we connect the upper part of the house symbols with the *ben* glyph, it is still by no means certain that it is derived from, or bears any relation to, the mat character. We notice further that in the figures of houses this supposed mat figure is not used to indicate the thatching, but is clearly distinguished from it. Again, if the upper characters of LXVI, 25, 26, are intended to signify the thatching, roof matting, or roof, and are simple ideograms drawn from

the thing represented, then the lower characters in these symbols might well be supposed to represent the wall or framework of the house. But the widely different relations in which we find this lower character forbid this conclusion. That the wall may be indicated is true, but if so it must be ikonometrically or by the phonetic value of the symbol. I have therefore found it very difficult to reach any entirely satisfactory conclusion in regard to these house symbols. That the lower character is phonetic in the true or rebus sense can, I think, be shown, but, notwithstanding the objections I have presented, the most satisfactory interpretation of the upper part is that it represents the roof, as we see in the upper figure of LXVI, 25, the crosshatching and the double *ben* lines. Hence it would seem satisfactory to consider it merely an ideogram or picture but for the prefix, which can not be readily accounted for on the idea of a pictorial representation.

As we have found that the lower character of plate LXVI, 26, has the phonetic value of *ch* usually combined with *o* or *u* (see remarks above on LXV, 44), we may find in this glyph *otoch*, "house," though the full signification of the entire compound symbol appears to embrace more than this. Possibly the upper part is a determinative. The lower part, however, of LXVI, 25 and 27, is found, as before remarked, where it can have no reference to a building. As it has the two heavy lines indicative of the *p* sound (see explanation of LXIV, 11), and also of the guttural, it is probable that the signification, where a structure is referred to, is *pak* (*pakal*), "a building, wall, fortification." But when it is found in an entirely different relation, as in Tro. 17b, where it is over an individual tying a deer, it must have an entirely different signification. It is possible that it may be consistently rendered by *pacoc* (*paccah*), "to cord, fasten, bind" (Henderson), or some derivative thereof. We find it again on Tro. 19*d and 20*d, and Dres. 18c, 1'e, and 20c, where females are represented as bearing burdens on their backs. Now, *cuch* signifies "to bear, to carry," and also "a load, a burden," and *cuch-pach*, "a carrier, a porter" (literally "to carry on the back," *pach* denoting "back").

In this instance also the phonetic value assigned it holds good. On Tro. 17b the same glyph stands above an individual who is in the act of striking a snake which is biting his foot. In this case it has a suffix like that to LXVI, 3, which, as we have stated, probably represents the sound *ah*, *ha*, or *hal*, and indicates that the word is a verb. There are several words containing the phonetic value assigned the character, which are applicable, as *pokchetah*, which Perez interprets "pisar, poner el pie sobre algo;" *puchah*, "despachurran, machucar;" *pachah*, "to scatter, break" (H.); *pech*, "to crush" (H.); *pacz* (*paczah*), "to squeeze, press, crush" (H.).

It seems, therefore, quite probable that the lower part of these compound symbols is phonetic.

If Dr Seler is correct in his supposition that the symbol is derived from the plaited mat, then it is most likely simply ideographic or a mere

conventional pictograph. Possibly this is the correct conclusion, as I can find no evidence tending to show that it is phonetic. If we could suppose the form was intended to represent a "road" or "pathway"—*be*, *beil*, and *bel* in Maya, and *beel* in Zotzil—we might assume it to be phonetic.

The combinations shown in plate LXVI, 28, 29, 30, and 55, in which the symbol of this day appears, have as yet received no satisfactory explanation. Those shown in LXVI, 28, and 55, are of very frequent occurrence and probably indicate some common ceremony, order, or direction in the religious ceremonies. I have a strong suspicion that the first indicates exorcism or driving away the evil spirits, but I find no appropriate Maya word unless it be *pekokalil*, given by Henderson. This, however, does not agree with the interpretation *Kinichkakmo*, given by Seler to LXVI, 29, above referred to. Seler gives to LXVI, 30, the apparently strained interpretation, "he who is conquered in war and brought home prisoner." I have no interpretation to offer.¹

THE FOURTEENTH DAY

Maya, *ix* or *hix*; Tzental, *hix*; Quiche-Cakchiquel, *balam*, *yiz*, or *hix*; Zapotec, *eche*; Nahuatl, *ocelotl*.

The symbol of this day is found in quite a number of different forms, some of which are wide variations from the prevailing type.

Landa's figure is shown in plate LXVI, 31. The usual forms found in the Tro. Codex are LXVI, 32 to 37; 36 is somewhat rare. That shown at 38 is found only on plate 30*c, and that showing the animal head (39) on plate 12c. No essential variations from these are found in either the Codex Peresianus or Cortesianus. Those shown in LXVI, 40-42, are from the Dresden Codex.

The Nahuatl name and the Quiche-Cakchiquel, *balam*, denote the "tiger," possibly the jaguar, though the Mexican name certainly refers to the *ocelot*. Dr Brinton says that the Zapotec *eche*, or in the full form *be-eche-quia*, has the same signification. Dr Seler, however, derives it from the term *peche-tao*, "the great animal"—the tiger, or ferocious animal. But the other names, *ix*, *hix*, *hiix* or *gix*, as they are variously written (though really one word), present a more serious difficulty to the attempt to bring them into harmony with the others.

Dr Seler says:

The Cakchiquel term *yiz*, i. e., the Maya *h-cz*, "the sorcerer," may well be considered as giving an explanation of the Maya name of this day character (*ix*). My conception, after one more link in the chain of evidence pointing toward it, is that the day-character system has become known to the Mayas through the medium of the cognate branches of Chiapas, for we frequently find the Tzental-Zotzil *x* corresponding to the Maya *z*.

¹Brinton says the *ben* symbol looks to him "like a wooden bridge, the two supports of which are shown and which was sometimes covered with a straw mat." If so, it must be shown in profile, and the hanging marks above (see LXVI, 16, 17, 19) would seem to be without signification; moreover, in LXVI, 18, the supports hang from above, which would, on this theory, imply a hanging bridge.

Dr Brinton says that the Maya, Tzental, and Cakchiquel word *hix* or *ix* means "sorcerer," though he does not furnish the evidence. Moreover, he adds immediately after that "it is probable *ix* is a variant of *ik* or *igh* 'wind, breath, life,'" and makes the connection by referring to the fact that blowing was practiced in medicine rites. It would have been more satisfactory, however, had he given the evidence on which he based his assertion that the Maya and Tzental name means "sorcerer." According to Ximenes the Cakchiquel name *yiz* denotes the "sorcerer;" and it is probable that the signification of *ix* or *hix* is the same, as the codices appear to give support to this conclusion.

On Dres. 8a the character shown in plate LXVI, 43, stands in the text over the figure of a tiger, and evidently refers to it. The close resemblance of this to the *ix* symbol from Tro. 12c shown in LXVI, 39, is too manifest to be overlooked. The same symbol is found in Tro. 17c, but here the prefix is changed to the numeral 4; below is a tiger-like animal with a feathered tongue protruding from its month. I have taken for granted, from the indicated action and my interpretation of one of the accompanying symbols, that this figure was intended to indicate the sorcerer or diviner. This supposition I admit is not supported by sufficient evidence to demand acceptance. However, it is probable that Léon de Rosny is justified in rendering LXVI, 43, by *ek-balam*. This supposition will be strengthened by any evidence tending to show that the prefix is properly interpreted by *ek*.

The symbol for the month *Ceh*, as given in Dres. 49c, is shown in LXVI, 44, and is the same as Landa's figure minus the suffix or month determinative. It would seem from the fact that the lower character of this symbol is the same as the lower portion of the symbols for *Yar* (LXIV, 12) and *Zac* (LXVI, 48), that the word *Ceh*, if the writing is phonetic or ikonomatic, does not give the entire phonetic equivalent unless the *x* or *c* of the other names is here softened to *h*. It may be added, however, that Henderson gives both *Ceh* and *Kez* as the name of the month and the Maya name for "deer." In the Zotzil vocabulary "ciervo" is *chig* and "venado" *chigh*. There is, however, a difficulty in harmonizing this with the symbol for the month *Zip*—in which the same character appears—that I have not been able to explain. Nevertheless, it may be said, as the lower character appears (from evidence that will not be introduced at this point) to have *z* or *dz* as its chief phonetic element, that it is possible the name had sometimes *ek* or *ke* prefixed. Running through the lower division of plates 46–50 of the Dresden Codex is a line consisting of repetitions of the character shown in LXVI, 45. Here we have again our *k*, *ke*, or *ek* glyph as a prefix. The right portion of the symbol bears a somewhat close resemblance to some forms of the symbol of the day *Lamat* (but not to *kin*, as has been suggested), and is so interpreted by Brasseur and Léon de Rosny. As *ek* signifies "star," and *lemba* "resplendent, bright, shining, sparkling," the phonetic value of the glyph may be "the bright, shining star," alluding to Venus. According to Henderson, *eekil*, *ekil*, or *yekil* was used to designate this star,

zaxtal being added to name it as a "morning star." According to the "Report on the city of Valladolid,"¹ the name given the "morning star" was *noch eke* (or *eque*). It is possible, therefore, that Dr Förstemann is right in supposing that the long numeral series running through plates 46-50 of this codex relates to the apparent revolution of the planet Venus.

In Dres. 18c is the compound symbol shown in plate LXVI, 46, followed by 47. In the former we see our *ek* or *ke* symbol as the upper character and the supposed *cimi* (LXV, 28) glyph as the lower character, and to the left a prefix. This prefix is precisely that in the symbol for the month *Zac* (LXVI, 48), and has presumably the same value in one glyph as the other. This will give, as the proper rendering of the symbol LXVI, 46, *zeek-cimil*, "the skull of the dead." By referring to the figure below the text, a woman is seen bearing on her back a skull inclosed in a wrapping of some kind, which in Kingsborough, where the color is retained, appears to be cloth. This certainly agrees with the rendering of the glyph. The symbol which follows it, shown in LXVI, 47, has one of the elements of LXVI, 27, and, as suggested under "the Thirteenth Day," should probably be interpreted *cuchpach*, "a carrier or porter" (or "bear upon the back"). In the corresponding glyph in Tro. 20*d (LXVI, 24) the upper portion, as above stated, refers probably to the hamper or basket-like holder in which the load is carried, and is a simple ideogram; but here (LXVI, 47) the upper character is phonetic, corresponding very closely to the lower part of the symbols for the months *Yax* and *Zac*. The character which follows—the lower left-hand of the group of four—seen at LXVI, 49, is the well-known symbol for woman. As the women were the burden bearers in Yucatan, the interpretation appears to be consistent. It is therefore probable that the prefix to LXVI, 43, is to be interpreted by *ek*, as Rosny has suggested.

Seler, alluding to the symbol, asks, "May not the skin of the tiger, instead of the animal itself, be here indicated?" He further suggests that it represents the round hairy ear and the spotted skin of the tiger, and that the glyph shown at LXVI, 39, represents the entire head of this animal, of which there can be little doubt.

Some of the symbols of this day, found in the Fejervary Codex, one of which is shown in LXVIII, 41, appear to favor Seler's idea.²

THE FIFTEENTH DAY

Maya, *men*; Tzental, *tziqin*; Quiche-Cakchiquel, *tziqin*; Zapotec, *naa* or *ñaa*; Nahuatl, *quauhtli*.

Landa's figure is so imperfect in this case that it is not given. The usual forms and variations are shown in plate LXVI, 50 to 54. The last two, which show the widest variation, are from the Dresden Codex.

¹ Cong. Inter. Americanistes, 1881, tom. 2.

² Dr Brinton says the usual form suggests scattered grain husks, the word for which is *xiix*.

The Tzental and Quiche-Cakchiquel, *tziquin*, signifies "bird" in general, and the Nahuatl, *quauhtli*, "eagle." The Maya and Zapotec names are more difficult to bring into harmony with the others. Dr Brinton thinks that the Zapotec name is derived from *na*, "to know, to understand, to be able through knowledge." This, he says, "exactly corresponds to the Maya *men*, which means to understand, to be able to do . . . ; hence in this latter tongue, *ah-men* means the man of knowledge, the wise one, the master of wisdom." "The bird," he adds, "was the symbol of wisdom and knowledge."

Dr Seler says it is difficult to determine the Yucatan name. However, from the form of the symbol he concludes it is intended to represent an aged face, by which he connects it with an aged goddess, Ixchel, the companion of Itzamna, and with certain Mexican deities. In his subsequent paper he says the Zapotec name furnishes linguistic proof of the above conclusion. "I had concluded," he says, "that the Maya hieroglyph represented the image of the old earth mother, the universally worshipped goddess called Tonantzin, 'our mother,' who is connected in the Codex Vienensis with the eagle symbol." He then adds that the Zapotec term *naa* or *ñaa* signifies "mother," and thus finds the connection between the calendar names.

It is probable we will not be far wrong if we assume that reference to the bird as used in this connection is not so much to it as an animal as an augury, sign, or portent. The birds introduced in the Dresden and Troano codices, especially those on pages 16, 17, and 18 of the former and 18* and 19* of the latter, are supposed to have reference to auguries. In the "Vocabulario Castellano Zapoteco," under "Ave," we find *mani-biici*, "ave agorera." In the Dresden Codex (17b) one of the birds introduced as playing this rôle is an eagle, or some rapacious species resembling an eagle or vulture. Although Seler believes the symbol to have been derived from the aged wrinkled female face, yet he closes his observations on this day in his first article as follows:

I think the reference to the eagle is very distinctly indicated [referring to a number of glyphs accompanying or indicating an eagle-like bird]. We can understand that these hieroglyphs were annexed as attributes of the deities. But how is it that figures 687-689 [same as our plate LXVIII, 42] serve as a seat for the Chac? Now Chac [he refers to the long-nose god] is not really a god of water, but of rain; the rain-producing storm cloud is his vehicle; the storm bird is his beast of burden on which he rides.

It follows from this, notwithstanding his supposition in regard to the origin of the symbol, that he looks upon it as signifying the eagle, or bird. However, the explanations given by Drs Brinton and Seler of the Maya name fail to make a satisfactory connection between the names in the different calendars.

Not only do we find birds introduced on the pages of the Troano and Dresden codices above referred to, apparently for the purpose of indicating augury, but on Dres. 69b we see the long-nose god (probably Itzamna) sitting on the glyph LXVIII, 42, holding a bird in his arms.

Also on Dres. 73b, where the groups are composed of short columns, each apparently relating to storms, winds, etc, we see in the right-hand group the bird and *men*-like glyph associated. Whether these are in fact *men* glyphs is a question not yet determined. I am as yet unable to interpret satisfactorily any of the compound characters of which these supposed *men* glyphs form a part. If the form shown in LXVI, 28, the lower portion of which is substantially the same as Landa's first *l*, is to be accepted as equivalent to LXVI, 55, then it is probable that the symbol of the day does not indicate the phonetic value of the name. This would lead to the supposition that the name *men* is not the original one applied to the day, or that the symbol has been changed. I am inclined to believe one or the other of these suppositions to be correct. If the symbol could be identified in the inscriptions, I would adopt the first supposition until substantial evidence of its erroneousness could be produced.

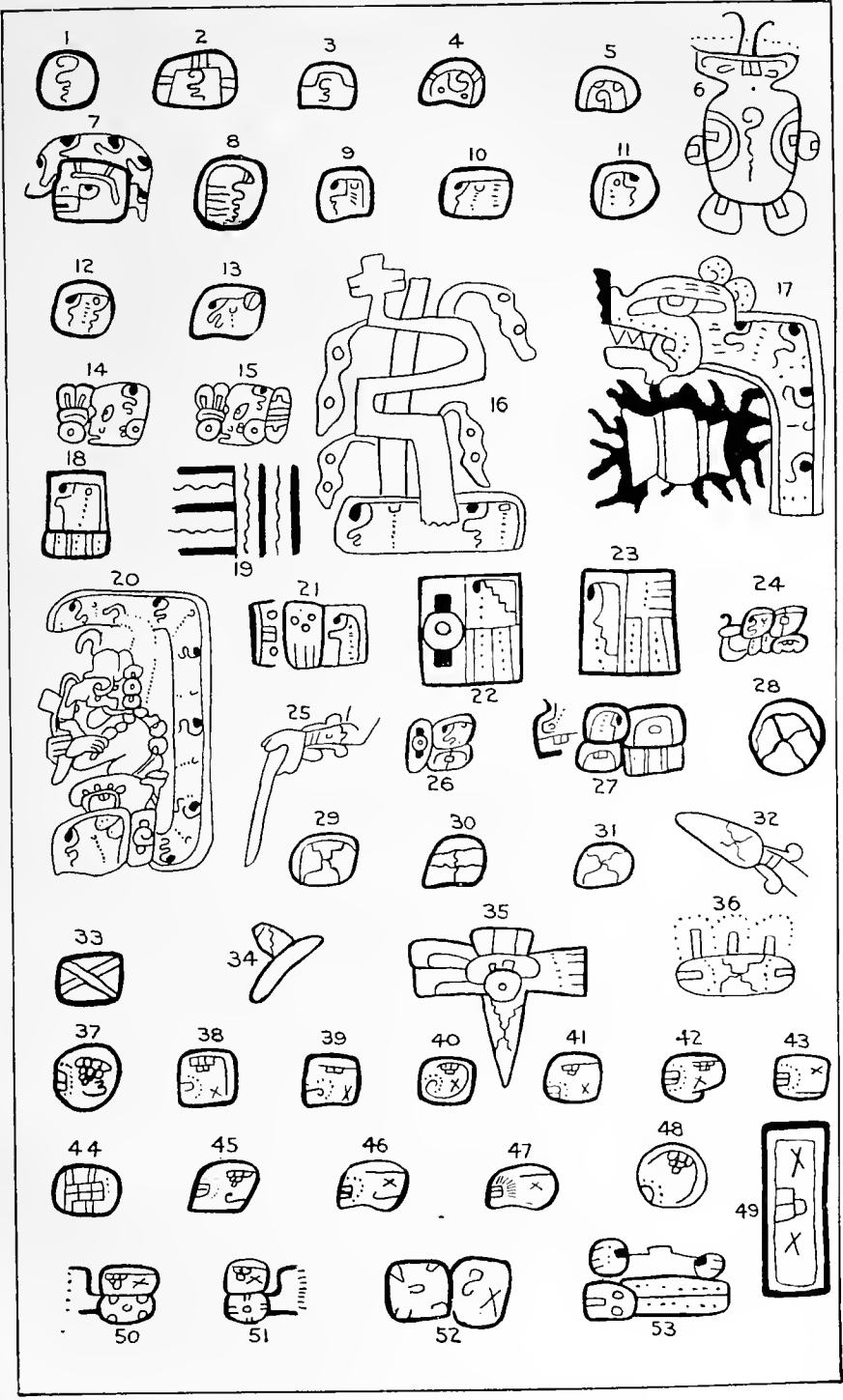
I am unable to offer any suggestions as to the origin of the symbol. I do not think the suggestion that it is intended to represent an aged face of woman or man of any force or worthy of serious consideration. The symbol would be just as complete so far as its signification is concerned without the eye as with it.

THE SIXTEENTH DAY

Maya, *cib*; Tzental, *chabin*; Quiche-Cakchiquel, *ahmak*; Zapotec, *guilloo* or *loo*; Nahuatl, *cozcaquauhtli*. In addition to these the following are also given: Pipil, *tecolotl*; Meztitlan, *teotl itonal* or *temetlatl*.

The forms of this symbol shown in plates LXVI, 56 to 59, and LXVII, 1 to 3, are those usually found in the codices, the slight differences being due to the greater or less degree of perfection with which they have been made. Landa's figure is similar to LXVII, 1. The variants in LXVII, 4 and 5, are from Dres. 46 and 49; but the symbols found in the day columns of Dres. 46 to 50 must not be taken as evidence of peculiar types, as they are to a large extent dashed off without care, one or two of a column being sufficiently exact for determination and the rest mere blotches. I have referred to them here and under other days simply because Dr Seler has noticed them; hence had I failed to allude to them it might be thought an oversight. However, I do not think any of the variations in the day columns of these five plates should be taken into consideration as types.

The Nahuatl name *cozcaquauhtli* is the "royal zopilote" (*Sarcoramphus papa* of ornithologists). Drs Seler and Brinton agree in the supposition that the Zapotec name is derived from *balloo*, "the raven or crow." Dr Seler says that the Quiche-Cakchiquel word *ahmak* seems to signify the vulture, "who peeks out the eyes," "who makes deep holes;" while Dr Brinton maintains that the Quiche *ahmak* means "the master of evil," referring to the owl, which is esteemed a bird of evil omen and bad fortune. The Pipil *tecolotl* also denotes "the night bird or owl."



COPIES OF GLYPHS FROM THE CODICES

The Maya and Tzentel names, however, present a difficulty not so easily explained. The signification of the former is "wax, gum, or copal gum," and also, according to Henderson, "root." According to Brinton the Tzentel radical *chab* means "honey, wax, bee, a late meal." He refers, however, to the Cakchiquel, where he finds that *ch'ab* means "mud, clay, mire," and suggests that "as red and black clays were the primitive pigments this may connect the Tzentel day name with the Maya." Seler, however, derives the Maya name from *ci* or *cii*, "to taste good," "to smell good;" and as *ci* is also the name of the magney plant, and likewise refers to the pulque or intoxicating drink from this plant, he concludes that *cib* must have been formed by the addition of the instrumental suffix, and hence refers to that which is used for wine, "either the honey, or, more correctly, the narcotic root."

This conclusion he thinks is strengthened by the fact that the corkscrew figure, which is the chief element of the *cib* symbol, is found several times on vases or earthen vessels (see LXVII, 6). Attention is called in this connection to the fact that *loo* in Zapotec signifies "root," which is also one of the meanings given by Henderson to the Maya *cib*, which would seem to strengthen Dr Seler's conclusion.

The glyph is seldom if ever found in combination with other characters or used otherwise than as a day symbol. This, together with the fact that it is not found except as a day symbol in the beekeeper's calendar in the Troano Codex, would seem to indicate that there has been a change in the name of the day since the origin of the symbol; or, on the other hand, the symbol has been modified from some older form. Nevertheless, there are some indications that it is phonetic and that the corkscrew figure has *b* as its chief element, whether *cib* be the word indicated or not.

In the symbol for the day *Caban* (LXVII, 9) we see the same corkscrew figure, and observe that *b* is the chief consonant element of the word. In the well-known symbol for woman (LXVI, 49) there appears the same character, usually double, one at the front of the face, the other on the back part of the head. I have usually considered this a mere conventional symbol, taken from the female head, these corkscrew figures indicating the rolls of hair. Nevertheless it is possible that it is phonetic, as we see on the cheek the *c*, *ch*, or *k* character heretofore referred to. As *chup*, *chupal*, and *chuplal* are names for "woman, female, or girl," the *p* may replace the *b* and represent the corkscrew figure. I am unable, however, to explain the prefix, which should have the *b* or *p* sound, or be a determinative. Possibly it may denote *pal*, signifying a young person, though this appears to refer generally to the male sex. Henderson, however, prefixes *x* to give it the signification "daughter, or girl."

That the symbol on vessels as shown in LXVII, 6, indicates liquid, or drink of some kind, is more than probable. It may refer to *balehe* (or *baleze*), the ceremonial drink, the symbol indicating the phonetic element *b*.

The upper portion of the figure shown in LXVII, 7, from Tro. 3*b and 4*b (in the space) I was at first inclined to regard as a reptile of some kind, but the fact of its presence in the section relating to bees and honey, and the corkscrew markings, render it probable that it is beeswax. To this evidence may be added the fact that the symbol over which it is placed contains some of the elements of the *cib* glyph. There are a number of places where quite similar markings appear on seats and other things, but these are distinguished by the added line of dots, showing it, as will be seen hereafter, to be in these cases the *cab* or *caban* symbol.

The facts which have been mentioned, together with the form of the symbol, may possibly lead to a correct understanding of its origin. It seems probable that the corkscrew figure, which is the chief, and apparently only, essential element, is taken from the root of a plant and was the conventional method of representing that object. As it appears from Henderson's Lexicon that "root" was one signification of *cib* (probably from *cibah*, "to follow, succeed," which also signifies "born, manifested, root," alluding to origin), and also that in Zotzil *yib* or *yibel* is "root" (*raiz de arbol*, *yibel-te*), we find the reason why this was selected as the symbol to express the sound *cib*. The fact that in the Zapotec *loo* signifies "root" strengthens this conclusion and indicates that the symbol is not used simply for the sound indicated—that is, phonetically or ikonomatically—but also with reference to the signification.

THE SEVENTEENTH DAY

Maya, *caban*; Tzental, *chie*; Quiche-Cakchiquel, *noh*; Zapotec, *xoo*; Nahuatl, *ollin*.

In addition to these, the following are also sometimes given: In Meztitlan, *nahui olli*; Pipil, *tecpila nahuatl*.

This character, as is apparent from plate LXVII, 8-13, is subject to no material variation; in fact, to no variation which would prevent us from at once identifying it. That shown in LXVII, 8, is Landa's figure. The change in position of the black spot and lines with reference to one another does not appear to have any significance. In the Troano and Cortesian codices the black dot is sometimes on one side and sometimes on the other. In the Dresden Codex, however, it is nearly always on the left. The one shown in LXVII, 13, in which there is introduced a new element, is found several times in the last part of the Dresden Codex.

This character is used very frequently otherwise than as a day symbol, being found separate and in combination, also as a mark on a number of articles. As it is possible to determine with reasonable, and in fact satisfactory, certainty its signification in a number of instances where used otherwise than as a day symbol, some of these will be noticed, as they seem to furnish strong evidence of phoneticism. But I repeat here the statement made at the commencement of this paper, that in using this term "phoneticism," I include that which

may, in a strict classification, be called ikonomatic. However, before referring to these, it is best to give the interpretations of the names which have been suggested, as the bearing of our interpretations of the symbols will then be better understood.

The Mexican name *ollin* or *olin* is generally interpreted "motion or movement," with special reference to the earthquake. Dr Seler, however, adds "caoutchouc ball." In his first paper, heretofore referred to, he remarks in regard to the Maya, Tzental, and Quiche-Cakchiquel names: "There is not much to be drawn from these words." In his subsequent paper he apparently relies upon the usual signification of the Mexican term, and from this and the signification of the Zapotec *xoo*, "powerful, strong, violent," concludes that the Tzental name may be consistently rendered by "large, powerful," and the Maya name by "that which is brought down, which is above," reference being made to ascending and descending. Dr Brinton derives the Maya term from *cab*, "might or strength," on the authority of the *Motul Dice.*, and says that in this sense it corresponds precisely with the Tzental *chie* (equal Maya *chich*, "cosa fuerte y dura"), the Quiche-Cakchiquel *nok*, "strong, great," and the Zapotec *xoo*, "force, power, or might." Dr Seler, however, concludes that the Zapotec name is here to be interpreted "earth," or to be understood as referring to the earth. He thinks that the day symbol is an abbreviated form of, or derived from, LXVI, 49, which he takes to be a symbol of the goddess Chiribias or Ixchebelyax, whom he identifies with Zaczuy, "the white maiden." As will be observed, we have expressed the opinion that this glyph is a symbol for woman in the general sense, which conclusion appears to be confirmed by its connection with different female figures. There are, however, certain prefixes and suffixes which may serve to give it a specific application; for example, in LXVII, 14, from Dres. 16c, the prefix, according to my interpretation, contains the *z* sound as its chief phonetic element. It is possible that in this case a particular person may be referred to by the prefix, the woman symbol being here simply a determinative. Dr Brinton, in his explanation of the month name *Zip*, remarks: "This was *Zuhuy Zip*, the virgin *Zip*, her name being properly *Dzip*, 'to skin, to dress slain animals.'" I prefer, however, to interpret the symbol by "maiden," or "young woman," the prefix signifying *zuhuy*. Nevertheless, the suffix in some instances, as LXVII, 15, from Dres. 18b, may indicate that a sacred or mythological personage is referred to, as it is added as a suffix in some cases to deity symbols; however, as it is often found in other relations, where it can have no such signification, I am not inclined to give it this interpretation, as the evident female deities are denoted by quite different glyphs.

The evidence that the Caban symbol is in some sense phonetic appears to me to be too strong to be rejected. In the first place, one of its chief elements is the corkscrew figure, which, as shown under the preceding day, appears to have *b* as its consonant element, this sound

being a prominent element of both *cib* and *caban*. It also has been shown that it is not out of place in the woman glyph, under the supposition that this is also phonetic, as *chup* or *chupal* is the Maya name for woman, and the change from *b* to *p* is not uncommon. It is found in several places as that out of which plants are growing, as LXVII, 16, from Tro. 32b, which appears to represent some leguminous plant supported by a stake driven into the ground. It is that on which persons are sitting Indian fashion, and on which others are lying; again, it is that out of which a serpent is arising. As "earth," "ground," will furnish an entirely satisfactory explanation in all these cases, there is no apparent reason why it should not be accepted. As *cab* has "earth" as one of its leading significations, we not only find therein a connection with the day name, but also an indication of phoneticism.

In Cort. 30a is the figure shown at LXVII, 17. The animal represented, notwithstanding the quadruped head, is conceded to be intended for the serpent. The shading around the vessel, a blotch of which is on the serpent's nose, I take for the clay or paste out of which the vessel is being formed, or to be formed. In the division immediately below is a representation of what appears to be some step in the manufacture of vessels. May this not be correctly interpreted by *kancab*, "la terra roja o amarilla," or "red clay?" Henderson gives *cancaan* as an equivalent term of *kankan*. As I have not seen a copy of the colored edition of this codex, I can not say whether this interpretation is borne out by the color of the shading. If this interpretation be correct, the serpent figure must be used symbolically or as a true rebus.

In Tro. 9*c an individual is represented lifting what is supposed to be honey or honeycomb out of a box-shape object on which is the *caban* symbol. This symbol is presumed to indicate the contents—"honey." If this supposition be correct, then, as *cab* is the Maya name for "honey," we have in this coincidence in sound and glyph another indication of phoneticism. Support is given to this interpretation by the fact that this is found in what is known as the "bee section," and that on the upper division of the same plate the same figure, with the *caban* symbol upon it, is seen in the hands of an individual who holds it to a bee.

As the character when used otherwise than a day symbol is frequently, perhaps most generally, drawn with a suffix, as shown in LXVII, 18, I suggest that it is possible it is a conventional method of representing earth or soil. By reference to the Borgian Codex, plate 11, also 19a and 61b, it will be seen that where earth is introduced into the picture it is indicated by heavy and wavy lines, as shown in LXVII, 19. This bears a very strong resemblance to the suffix of LXVII, 18. The corkscrew or root figure is added as appropriate, as an element, in forming an earth figure. Such, I am inclined to believe, is the origin of the symbol which, when used to indicate anything else than earth, is used phonetically or ikonometrically. The figure shown in LXVII, 20, from Dres. 30a, which Seler calls a serpent, is merely the representation of a clay image and

the seat or oratorio in which it is placed. It is probably from something of comparatively small size, burnt in one piece. The mark of the earth symbol, to distinguish the substance of which it is made, is certainly appropriate. In Tro. 6b we see another on which is quite a different symbol, indicating, as will hereafter be shown, that the material is wood.

The compound character in LXVII, 21, is found in Tro. 9*b and 10*c. It occurs in the latter twice, the parts, however, reversed in the parallel groups, while in that of 9*b one is above the other. These variants do not necessarily indicate a difference in the signification, as can readily be ascertained by comparing characters in the numerous parallel groups. Omitting the prefix, this may be rendered *mak-cab*, "to eat honey without chewing (that is, by sucking); to break into a hive and steal the honey." By reference to the plates on which the symbols are found the appropriateness of this rendering will be apparent, if I rightly interpret the figures below the text. There we see the twisted red symbols denoting the fire kindled beneath the hives, or beehouses, by which to drive out or destroy the busy little workers. In one of the fires we observe bone symbols, probably denoting a method of giving to the smoke an unpleasant odor, as rags were formerly used in some sections of our country for the same purpose.

The characters shown in LXVII, 22 and 23, are from the upper part of Cort. 22, which is supposed to be the right half of the so-called "title page" of the Tro. Codex. These are interpreted by Seler, and probably correctly, as indicating "above" and "below" (LXVII, 22, the former, and LXVII, 23, the latter). By following the line in which these characters are found, through the two pages, beginning at the left of the plate of the Tro. Codex, the result appears to be as follows, giving the signification of the characters so far as known: First, the four cardinal points in one direction, then two characters apparently corresponding with the two we have figured, one of which is partly obliterated; next the cardinal points in an opposite direction, after which follow the two characters shown in LXVII, 22 and 23. As the right half of the first (22) is the *cab* or *caban* symbol, it is presumable that it has here substantially the same phonetic value. It is probable, therefore, that the whole compound character may be rendered *yokcabil* (or *okcabil*), "above the earth," or as Henderson, who gives two words of this form, interprets the first, "over, above the earth, above." The second (LXVII, 23) has also as its chief part the *cab* symbol, and the upper right-hand portion appears to have *x'm* as its chief phonetic elements. It is possible that *cabnix* "a stair," "downward," given by Henderson, furnishes the phonetic equivalent of the compound character. These six directions, according to Dr J. W. Fewkes,¹ were noted by the Tusayan Indians in some of their religious ceremonies. Mr Cushing says the same thing is true in regard to some of the Zuñi ceremonies.

¹ Jour. Am. Eth. and Arch., II, p. 38.

Plate LXVII, 24, is a compound character from Dres. 39b, below which the long-nose deity holds in his hand a peculiar article (LXVII, 25), "as if," says Seler, "pouring out of a bottle." That the prefix has the interior cross-hatched when complete appears from a number of other places, as, for example, in the upper division of the same plate. This, as heretofore stated, gives the *x* or *ch* sound. It is possible, therefore, that the symbol, omitting the right portion, should be interpreted *xachcab*, "abrir de par en par," or *hechcab*, "to open little by little, to develop, discover it" (Henderson). As the right portion has a character resembling the *Muluc* symbol as its chief element, and below it the *u* glyph, we may translate it *muyal*, "cloud." This would give as the meaning of the entire symbol "open the cloud"—that is, "to pour out the rain." As this is connected with a rain series, and we see a similar glyph (though with different prefix) on plate 38b, where the same deity is in the midst of a rain storm and holding in his hand a similar object, the rendering appears to be, at least, appropriate. It is to be further observed that this combined *Caban* and *Muluc* symbol is found frequently in connection with rain storms and cloud symbols.

According to the interpretation given LXVII, 22 and 24, the compound symbol shown at 26, from Dres. 35b and 34b, should be rendered *Yokcabil muyal*, "the cloud above." As we see in both places, in the picture under the text, the looped serpent inclosing water, which Dr Seler considers the "water sack" or cloud, this interpretation is appropriate. As further confirmation of the interpretation given LXVII, 22, attention is called to the picture in Tro. 32*c over which the same symbol is found. Here the allusion is doubtless to the basket-like covering over, or "above," the black deity lying on a mat.

THE EIGHTEENTH DAY

Maya, *edznab* or *ezanab*; Tzental, *chinax*; Quiche-Cakchiquel, *tihax*; Zapotec, *gopaa*; Nahuatl, *tecpatl*.

The form of the symbol of this day varies but little in the codices, as shown by plate LXVII, 28-31. It is seldom found in this form in combination. If its equivalent is given in these, it is of the form shown in 33. It is, however, occasionally seen on articles of stone, as the spearpoint (32) and stone hatchet (34) and sacrificial knife. It also appears in the symbol for the stone mortar (36) from Tro. 19c. Before discussing its signification and probable origin we will give the significations which have been suggested of the different names of the day.

The signification of the Nahuatl name—*tecpatl*—is "flint." Dr Brinton says, "especially the flint-stone knife used in sacrificing, to cut the victim." Dr Seler finds agreement in the Tzental name from a statement, by Nuñez de la Vega, that the symbol *chinax*, or rather the tutelary god of the same, was a great warrior, who was always represented in the calendars with a banner in his hand, and that he was slain and burned by the nagual of another heathen symbol. Dr Brinton states

that the name "is an old or sacred form of the usual *zni-nax*, 'knife.'" The literal meaning of the Cakchiquel *tihax* is, according to Ximenes, "it bites, scraping" (*muerde rasgando*). Dr Seler, however, affirms that Ximenes (with what authority he knows not) gives "obsidian" as the meaning. He thinks the word is related to the root *teuh*, "cold"—*tih-ih*, "to be cold"—with which may be compared the words *tic*, "to stick in, prick;" *tiz*, "to stitch," and *tiztic*, "pointed."

In regard to the Zapotec name, *gopa*, *gopaa*, or *opa*, the authors named differ quite widely, Dr Seler deriving it from *rogopa*, "cold," and Dr Brinton suggesting that it is more likely "a variant of *guipa*, a sharp point or edge, whence the word for stone knife, *gueza-guipa*, from *guia*, stone."

The Maya name, however, does not appear to be readily brought into harmony with the others. Dr Seler simply remarks that it may be related to the root *e*, "firm, rigid, hard." Pio Perez offers no explanation. Dr Brinton suggests that it is a figurative expression for the sacrificial knife, from *nab*, something anointed, or blood, and *edz*, to adjust, to point, to sharpen.

There can be no question that the articles in the codices on which the trembling cross is found consists, in most instances, if not all, of stone. Hence it is a reasonable conclusion that the primary signification of the symbol is stone. The Zotzil name for "flint" (pedernal) is *zuiton*.

I am inclined to believe that the symbol is derived from a conventional form used for indicating stone or flint, probably from the cracks or fissures in it.

I am not prepared yet to discuss the somewhat similar figures which assume the form of the St Anthony cross. Various interpretations, as symbol for "union," "night sun," etc, have been given. However, as this form is never used as a day symbol, it has no direct relation to the present discussion.

THE NINETEENTH DAY

Maya, *cauac*; Tzental, *cahogh*; Quiche-Cakchiquel, *caok*, *cook*; Zapotec, *ape*, *appe*, *aape*; Nahuatl, *quiahuiltl*.

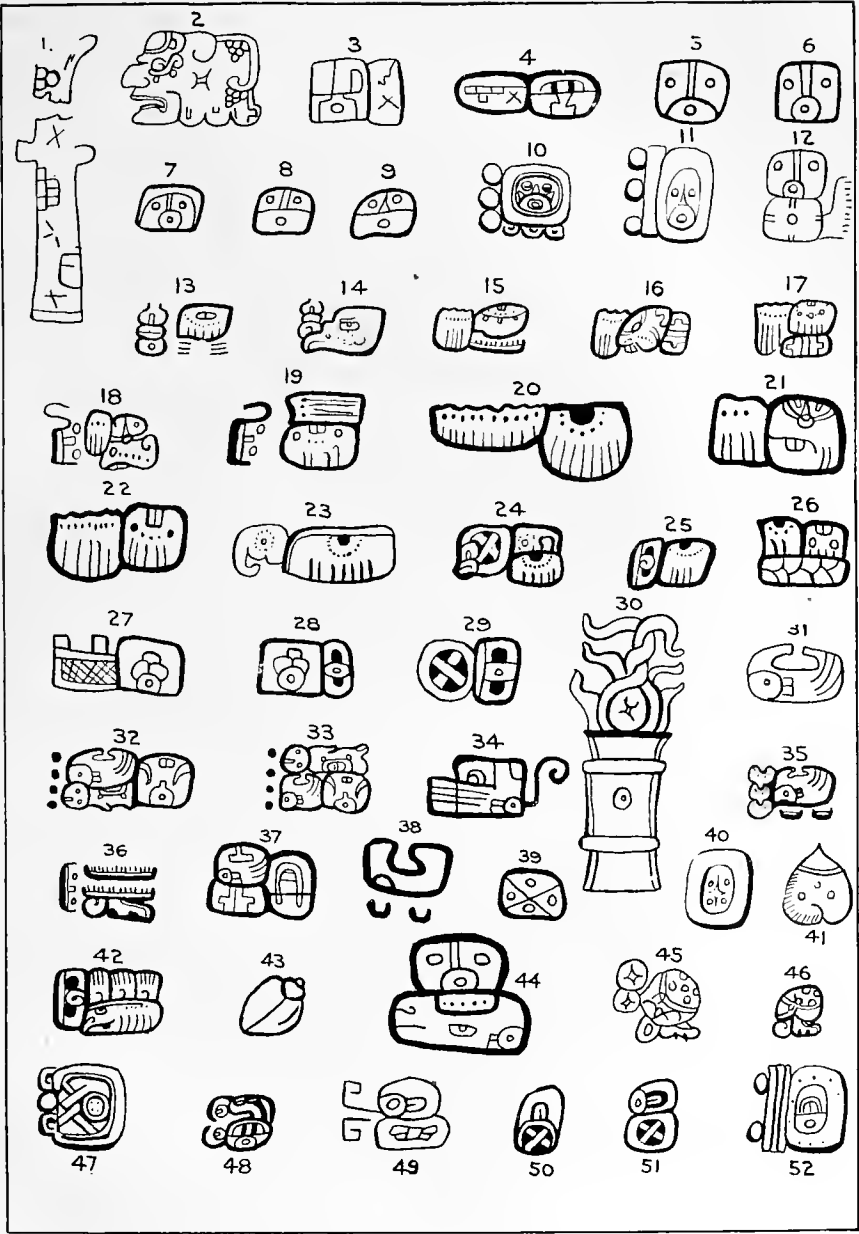
The various forms of the symbol of this day are shown in plate LXVII, 37-48—that by Landa at 37; those of the Troano and Cortesian codices at 38-43, and those from the Dresden Codex at 45-47. The irregular form given at 44 is from Tro. 28d, and that at 48 from the Peresianus.

This symbol is found quite frequently in combination with other characters, in some of which its phonetic value can be ascertained with reasonable certainty. For example, it forms the lower half of the symbol for the month *Yax*, as seen at LXIV, 12; also in the symbol for the month *Zac* (LXVI, 48). In both these instances its chief phonetic element appears to be the guttural sound *k*, or *ks*. The essential elements are also found frequently on objects which are undoubtedly of wood and where no reasonable explanation can be given except that it signifies "wood" in these places. For example, it is found on what appear to

be boards carried in the hands of individuals, on Tro. 32*b (LXVII, 49); and it also is seen on what appear to be wooden boxes or gums from which the honeycomb is being removed, as Tro. 5*c and 9*a. Dr Seler, who gives quite a different interpretation of the character from that presented here, admits that these are boards. It is also found on trees, as Tro. 15*a (shown in LXVIII, 1) and 17*a, and Dres. 26c, 27c, and 28c. It is marked on the walls of houses or canopied seats, as Tro. 6b, 29*c, and 18*b. Under the last mentioned we observe the *cab* symbol, showing that it is a building placed on the ground and not on a stone foundation. It also appears on the ends of beams, as at Tro. 9a and 22*a. True, Dr Seler contends that these are stones instead of weight poles, but I think all trappers will decide against him. Again, it appears on seats (Tro. 13a and 14*a) and also marked on heads, one of which is shown in LXVIII, 2. That the symbol is not intended to indicate the different articles on which it is found is evident; hence it must be given to denote the substance of which these things are formed, which I maintain can only be wood. That the trees and boards must be wood is admitted; that the walls of many of the houses and of some of the other buildings of Yucatan were of wood must be admitted; that seats were often of wood is well known. The heads with this mark are in all probability representations of wooden masks. Masks are represented in the hands of individuals at several places in the codices, as Dres. 42(1)a and in Peresianus. I therefore conclude that in all these cases the symbol is to be interpreted by *che, cheil*, "wood, tree, timber, stick."

In order to show the difference between the explanation given here and that by Dr Seler, I copy the latter:

We find, for instance, on the one hand the undoubted application which is connected with the idea of cloud or rain. Thus, in the hieroglyph, figure 80, the accompanying hieroglyph of figure 46. i. e., the bird Moan. So also the one in figure 28 (p. 107) the accompanying hieroglyph of the name Kinchahau, which, besides cauac, contains further the element of fire and that of the hatchet, which may remind us of the ray [or flash] darting from the clond. The hieroglyph cauac is, however, used far more commonly in the sense of "stone" or "heaviness." This is most clearly shown in the case of the animal figures pictured in Cod. Tro. 9a and 22*a, where the stone laid upon and weighing down the horizontal beam is represented by the element cauac. But this explanation must be accepted also, because we find the pyramidal foundation of the temple covered with the element cauac. And where, in Cod. Tro. 15*a, to the Chac who is felling a tree is opposed the death god, also felling a tree, covered by the element cauac, it is clear that here there is substituted with the death god a rigid stone in place of what with the Chac is a sprouting tree. The numerous cases in which the hieroglyph cauac serves as a seat or footstool of the gods are sometimes easily interpreted as signifying clouds, but in the majority of cases it undoubtedly represents "stone," homologous to the hieroglyph caban and the element *tun*, "stone," itself (figure 85), both of which are found equally often denoting the seat and footstool of the gods. It is equally evident that in the hieroglyph figure 84, in which there is indicated the bearing of a burden on the back, the element cauac is to be understood simply as the expression of the weight, the burden. In the peculiar cases where we see the gods holding a board provided with the elements of the character cauac, or where a board is placed before the gods, furnished with a plaited handle whose side bears the element cauac, the latter seems to relate to a sounding board, for the accompanying hieroglyphs seem to signify music. Finally, there can be



COPIES OF GLYPHS FROM THE CODICES

found a direct homology between the element *canac* and the element *tun*. This is seen in the hieroglyph of the hunting god of figure 83, whose distinguishing mark is usually an eye or the element *tun* (i. e., a precious stone), which he bears in the front of the headdress. The hieroglyph of this god is written sometimes as in figure 81, sometimes as figure 82. And that the element here, which in figure 82 replaces the element *canac*, is to be understood in fact as *tun* or "stone, precious stone," is evident, on the one hand from the application of the precious stone in the headdress (*tun*, "piedra, piedra preciosa"), and, on the other hand, from its use as the base of the pole on which *Mam*, the *Uayeyab* demon, is set up during the *xma kaba kin* (Cod. Dres. 25c). Now, it is true that a connection of ideas can be established with considerable certainty between clouds, rain, and stone, for in that region every rain was a thunderstorm. But at the same time it will be found comprehensible that a barrier of doubt was removed when I discovered in the course of my Zapotec studies that in Zapotec the same word was used for "rain" and "stone," namely, *quia, quie*.

According to the explanation I have given above, the chief phonetic element of the character is the guttural sound *k*, *ks* (or *x*), and *ch*. As additional evidence tending to confirm this conclusion, the following examples are given:

Symbols 61, LXV, from Tro. 22*a, and 62, from Dres. 1 (42), have already been explained, the first as signifying *kutz* or *cutz*, "the turkey," and the second *tzac*, the name of a certain fish found in the *senotes*. In the first (61) the first or left-hand character is our *Cauac* symbol and has the *k* sound, and the same symbol forms the right portion in the second (62) and also has the *k* sound. In LXVI, 47, from Dres. 18c, the *Cauac* symbol forms the first or upper portion. The whole compound symbol, as above shown, may be consistently interpreted *cuckpach*, "a porter or carrier;" literally, "one who bears on the back." Again we see the *k* sound given the character is consistent. The symbol for the month *Ceh*, as found in the Dresden Codex, is shown at LXVI, 44. In this the last or lower portion is also the *Cauac* character, and, according to the value assigned it, should have a harder sound than the simple aspirate. That such is the case is rendered probable by the fact that Henderson gives *ceh* and *kez* both as names of the month and as Maya words for "deer." In the Zotzil *chigh* is the name for "deer." It is therefore apparent that the symbol has here the guttural sound.

The glyphs in LXVII, 50 and 51 (Cort. 21), probably signify "night" and "evening"; the first (50), *akab*, "night," and the second (51), *kankin*, one signification of which, according to Henderson, is "evening." The wing-like appendage is probably a time determinative. These last interpretations are of course given with some doubt. However, this may be said in their favor, that wing-like appendages are usually attached to time symbols, and that the figures below the text represent persons, each of whom carries what appears to be a wheel, possibly like those used in keeping time, and the main character of the preceding symbol in both cases is the *Manik* glyph, having *ch* as its chief phonetic element and *chackinil*, signifying "hours, wheel." Precisely the same symbol as LXVII, 51, preceded by the *Manik* glyph, and a wheel in the hand of the person figured below the text, is seen in Troano 35d.

The character shown in LXVII, 52, from Tro. 35c, may possibly be correctly rendered by *bakah* (*baakal*), "to roll round about, to go round about," alluding to the flight of the vulture figured below the text. This supposition appears to be strengthened by the probable interpretation of the symbol immediately below it (LXVII, 53), *malaalahah*, "without repeated buffetings." The character given in LXVIII, 3, from Tro. 31a, may be interpreted *pak*, "to sow seed, to plant," and that shown in LXVIII, 4, from the second division of the same plate, indicates the same word, as the transposition of the parts of a symbol does not always indicate a change of signification. Possibly, however, its equivalent may be *capak*, "to reseed or sow seed the second time," or *kapak*, "to place in a trench or hole." As the persons figured below the text appear to be planting seed by dibbling them in with a stick, this would seem to be an appropriate rendering. Dr Seler appears to have entirely misunderstood these figures, as he thinks they represent the deities pouring out water. I have in a previous part of this paper given some reasons for believing that these plates refer to the planting and cultivation of corn.

These examples will suffice at this point.

It is difficult to decide as to the origin of the glyph. However, I am inclined to believe it has grown out of a conventional symbol for wood, possibly drawn from the little knots and marks seen on the inside surface of split wood. This may be wide of the true explanation, but all the indications I can find point in this direction. As "wood" (*leña*) in Zotzil (I do not know what it is in Tzental) is *ci*—equal to *ki* or *qi*—we obtain the guttural sound which appears to be the chief element of the symbol. In its use it appears to shade off from the hard to the soft sound.

The Zapotec name *ape*, which, according to Dr Brinton, may properly be translated by "lightning," or "the lightning flash," is much like the name for "fire" which prevails throughout Oceanica. Commencing with the Malay *api*, we trace it through the Oceanic islands in such forms as *api*, *lap*, *yap*, *nap*, *yaf*; to New Zealand *kapura*; Tonga and Samoan *afi*, and Hawaiian *ahi*.

In the Zapotec words *laari-api-niza* and *ri-api-laha*, translated "relampage, relampaguear," we find precisely the original form of the Oceanic word for "fire."

THE TWENTIETH DAY

Maya, *ahau*; Tzental, *aghual*; Quiche-Cakchiquel, *hunahpu*; Zapotec, *lao* or *loo*; Nahuatl, *rochitl*.

The symbol for this day, except where evidently imperfectly drawn, is subject to but few and slight changes, that given by Landa corresponding to the form found in the codices.

The usual and correct form is shown in LXVIII, 5-7: slight variations are seen in LXVIII, 8 and 9. Dr Seler figures several other varieties, but



SHELL BEARING MAYA GLYPHS

This shell, on which are engraved seven Maya hieroglyphs, was found in Belize and courteously sent to the Bureau of American Ethnology by Sir Alfred Moloney, Governor of British Honduras. The shell is here figured for the purpose of placing it before students of Central American paleography.



as these are from plates of the Dresden Codex, where the symbol is in columns, where they are evidently hastily made, without any attempt to have more than one or two in a column complete, they are not given here. The character represented in LXVIII, 10, is from the Tikal inscription, and that in LXVIII, 11, from the Palenque Tablet.

The Maya and Tzental names signify "king, lord, sovereign." The derivation of the word has been explained in various ways. Brasseur explains it by "the lord of the collar," *ah-au*, as does Dr Brinton; Stoll gives "lord of the cultivated lands," from the Ixil, *aruan*, "to sow." Dr Seler, however, is disposed to derive the name from the masculine prefix *ah* and *uini* or *vinak*, "man." His method of reaching this conclusion is as follows:

For the Tzental word *aghual*, standing parallel with the Maya *ahau*, which doubtless corresponds to the abstract form *ahau* of the word *ahau*, is to be referred rather to a primitive form *aru*, *a'ku*, *ahu*, than to *ahau*. In the Tzental Pater Noster which Pimental gives, we find the phrase "to us come Thy kingdom (Thy dominion)" expressed by the words *aca taluc te aguajuale*. The primitive meaning of *ahau* is certainly "man," "lord," and the two roots of similar significance, *ah* and *vu* (see *uini*, *vinak*, "man") seem to concur in this word.

He explains the Quiche-Cakchiquel *hunahpu* by *hun*, "one," and *ahpu* "lord of the blowpipe," or "blowpipe shooter." Dr Brinton translates it the "One Master of Power." He brings the Mexican name into harmony by rendering it "the flower of the day"—that is, the sun; and the Zapotec by rendering it "eye," meaning "the eye of the day"—i. e., the sun.

When we attempt to bring the symbol of the day into harmony with the Maya name, we encounter a difficulty which can be overcome only by following a different line from that suggested by Dr Brinton or Dr Seler. That the character shown in LXVIII, 12, is the symbol for the cardinal point "east," which in Maya is *likin*, is now generally admitted, and that the lower portion is the symbol for *kin*, "day" or "sun," is also admitted. We are therefore justified in concluding that the upper portion, which is the *Ahau* symbol, stands for *li*, and that *l* is its consonant element. If Landa's second *l* (shown in LXVIII, 43) is turned part way round, it will be seen that it is a rough attempt to draw the *Ahau* symbol. If a careful study is made of his *l*'s as given in his list, and his example of spelling *le*, and of the similar characters in the codices, it will be seen that both his *l* characters are derived from the same original. For example, the character shown in LXV, 60, from Tro. 22*a is precisely the combination which this author translates *le*, "a snare," or "to snare." By referring to the plate it will be seen that it is followed by the character (LXV, 61) which we have interpreted *kutz*, "turkey," and that in the picture below the text there is a lassoed turkey. It is apparent, therefore, that both these forms are used sometimes for words of which *l* is the chief phonetic element, and that the parallelogram and two interior dots are the essential elements. The day symbol is of less frequency in combination than the other form, but it sometimes occurs. It must, however, be distinguished from the closely allied *p* symbol heretofore alluded to.

From what has been shown in regard to the symbol it would seem, if considered phonetic, that the original day name it was intended to represent contained *l* as its chief consonant element. If ikonomatic, the name of the thing indicated had *l* as its chief element.

I think there can be little doubt that the symbol, as has been suggested by others, was taken from the full face, the central double line representing the nose, the two open dots the eyes, and the circle below the mouth. Now, according to Fuller's Zapotec Vocabulary, the name for face is *lu*, which is the Zapotec name of the day. As has been stated, Dr Brinton thinks the Nahuatl and Zapotec names refer to the sun, and he is inclined also to believe that the "ruler" or "sovereign" referred to by the names of the Maya dialects is the sun.

I think we may rest assured that the symbol of this day was derived from the full face, and that the word (for face) it was intended to indicate had *l* as its chief phonetic element—possibly from *lec*, "brow, front, forehead." If derived from the face, its use as a day symbol, and in numerous combinations, proves beyond question that it is phonetic in the true or in the rebus sense.

APPENDIX

A LIST OF THE DEITIES OF THE DAYS OF THE MONTH IN THE MAORI CALENDAR (AFTER TAYLOR).

1. *Tune* was the parent of the tui, of birds in general, and trees.
2. *Ru*, the father of lakes and rivers.
3. *Rupe*, of the pigeon.
4. *Tangaroa*, of fish.
5. *Irawaru*, of dogs.
6. *Ngā rangi-hore*, of stones.
7. *Mauika*, of fire.
8. *Maui*, of the laud.
9. *Mumuhunga*, of the Totara; also called Tukau moana.
10. *Paruri*, of the Tui [bird].
11. *Papa*, of the Kiwi [*Apteryx Australis*].
12. *Owa*, of the dog; he was also the father of Irawaru.
13. *Pahiko*, of the Kaka.
14. *Punga Matua*, of the shark (tuatui), lizard, and tamuri [the snapper-fish].
15. *Tute maona*, of the Kabikatoa [a plant so named].
16. *Hina-mōki*, of the rat.
17. *Tuwairore*, of the Kabikatea [a certain tree] and Rimu [a species of pine].
18. *Haere-awa-awa*, of the Weka [a large bird].
19. *Rongo*, of the Kūmara [sweet potato]; also called Rongomatane.
20. *Tiki*, of man.
21. *Tute-nga-nahu*, of evil.
22. *Tahu*, of all good.
23. *Tawiri-matea*, of the winds.
24. *Mokoikūwāru*, of lizards.
25. *Otunui-rangi*, of the palm tree (nikau) and flax (harakeke).
26. *Haumia*, of the fern root.
27. *Tomairangi*, of dew.
28. *Hau-papa*, of ice.
29. *Hauhunga*, of cold.
30. *Te-apu hau*, father of storm and tempests.

It must be understood that these are not the names of the days, but of the deities which preside over them, and of the things which they created or of which they had special care.

DAY SYMBOLS
OF
THE MAYA YEAR

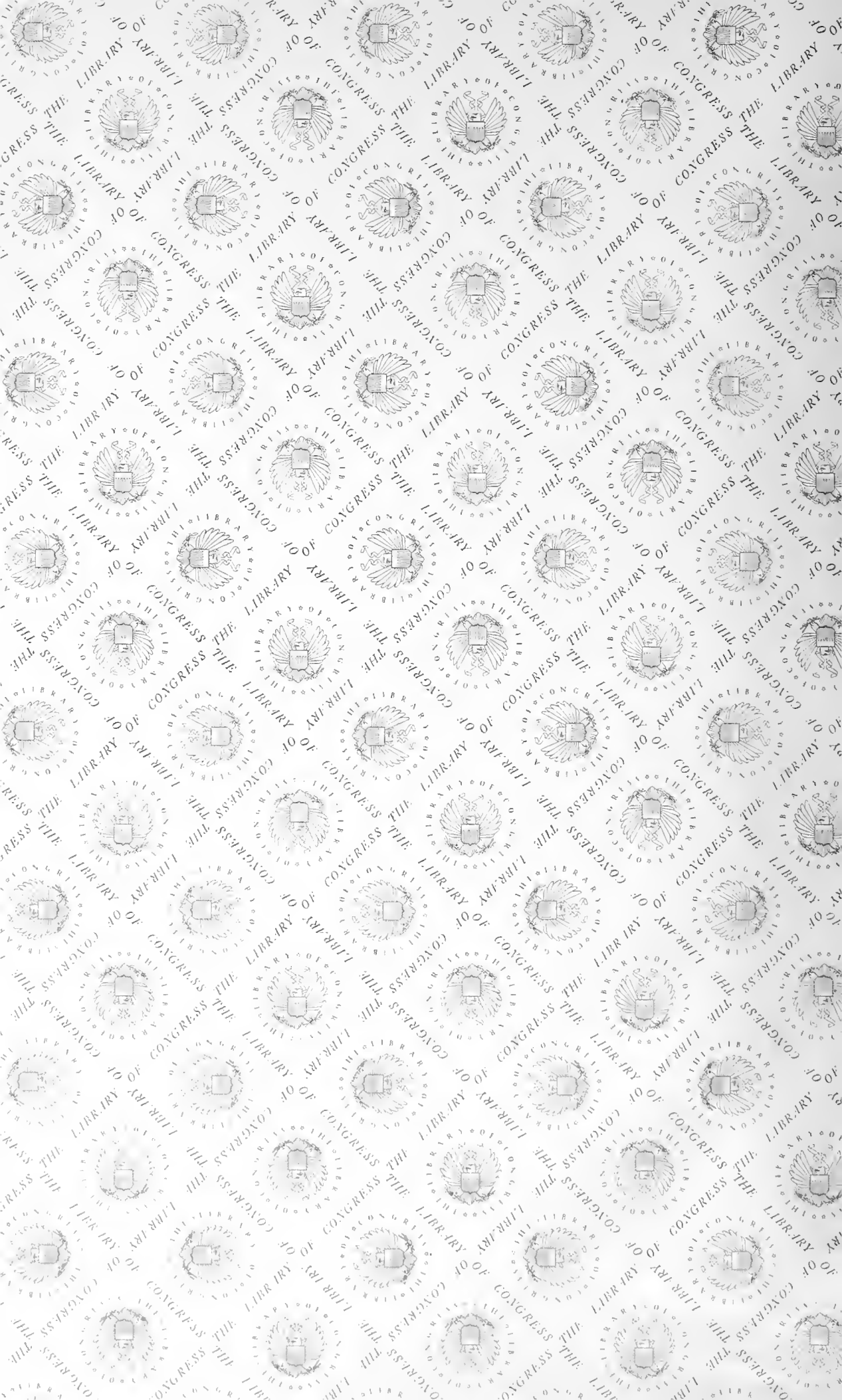
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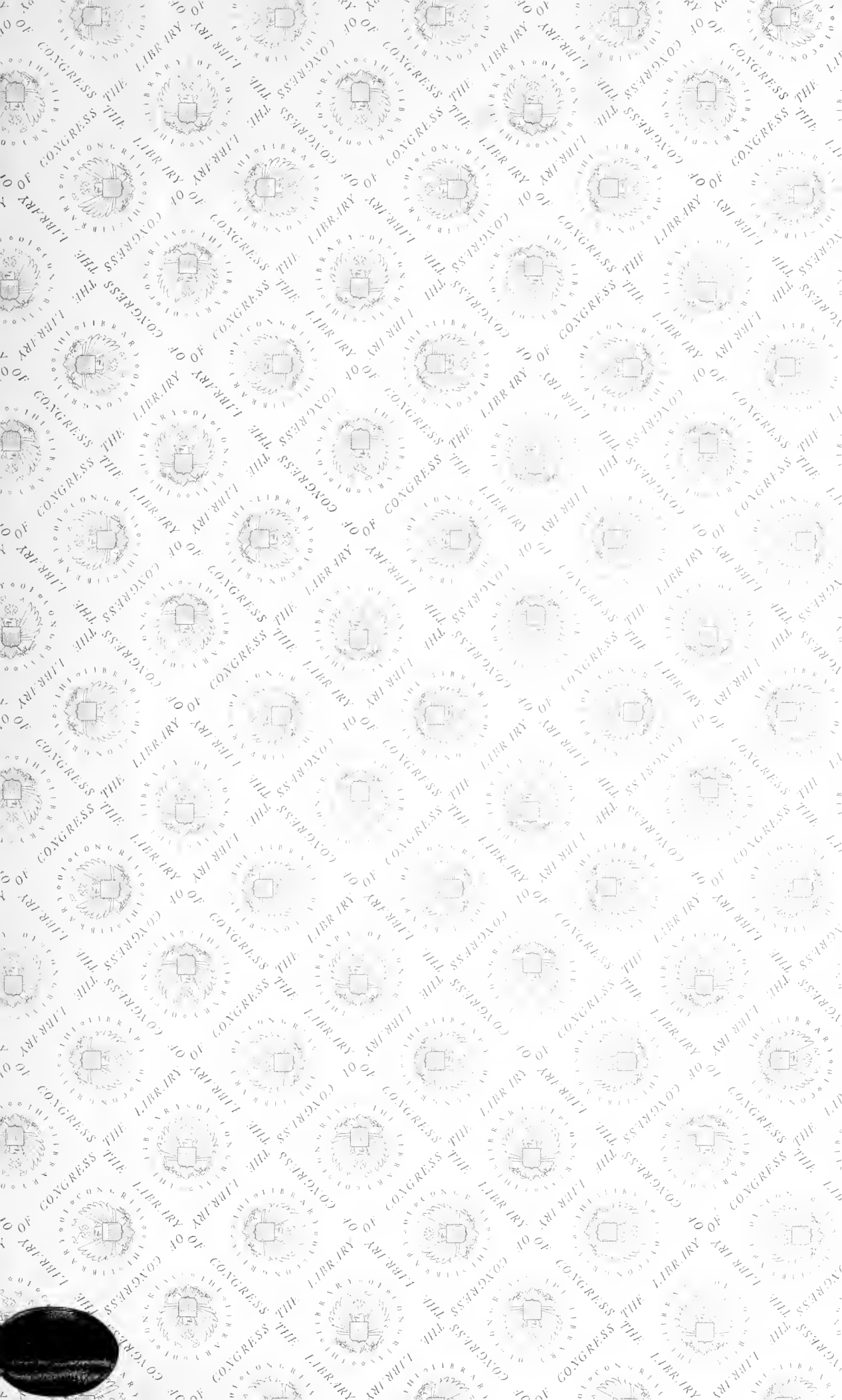
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